PAPER TRADE JOURNAL

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- **Instruments**
- **A New Pigment**
- **Safer Winder Nip Guards**
- **Bleaching of NSSC Pulp**

December 31, 1954

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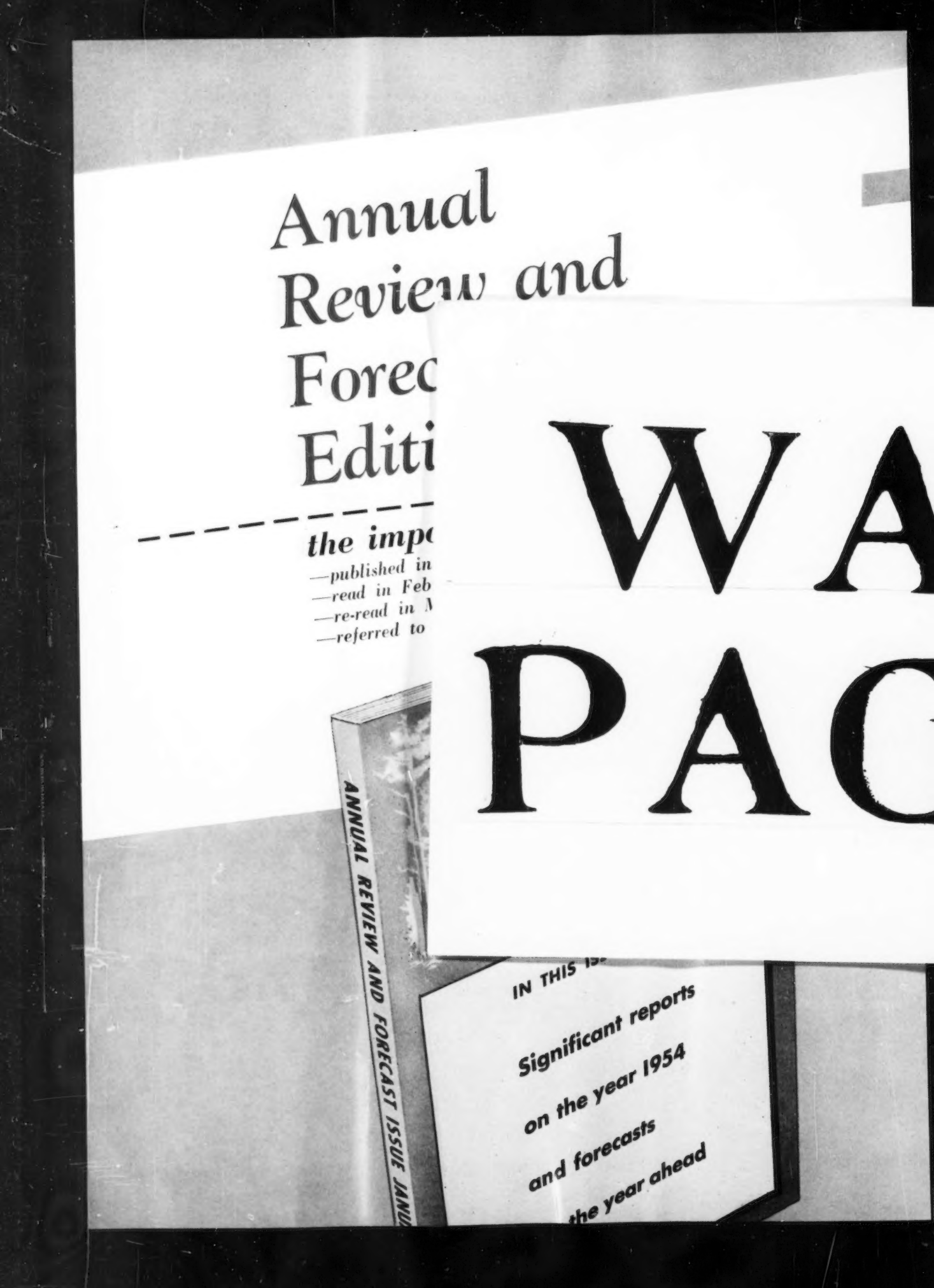
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on the year 1954
and forecasts
the year ahead

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If you are not now using the ... time to start.

closing date January 21

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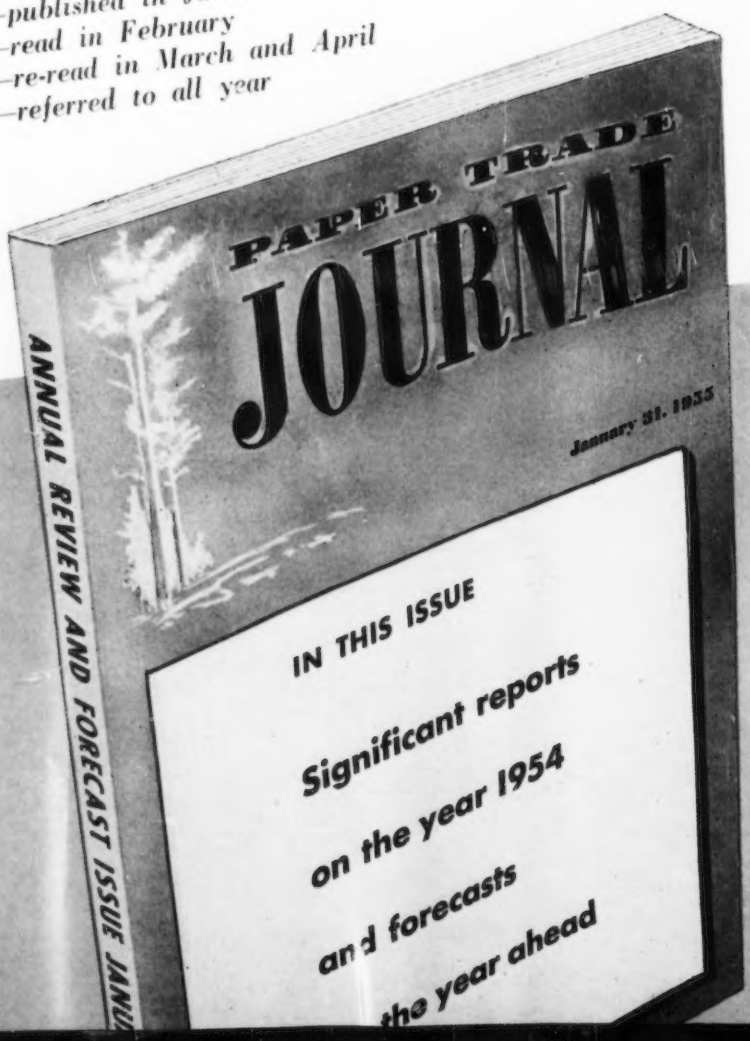
Annual Review and Forecast Edition

the important issue that is

—published in January
—read in February
—re-read in March and April
—referred to all year



what this issue will contain

first reports on 1954 Production.

Statements by leading authorities in pulp and paper manufacturing, reviewing 1954, reporting trends, forecasting production in 1955.

Report on raw material outlook.

production records and outlook for all grades of pulp, paper, paperboard, wallboard, etc.

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closing date January 21

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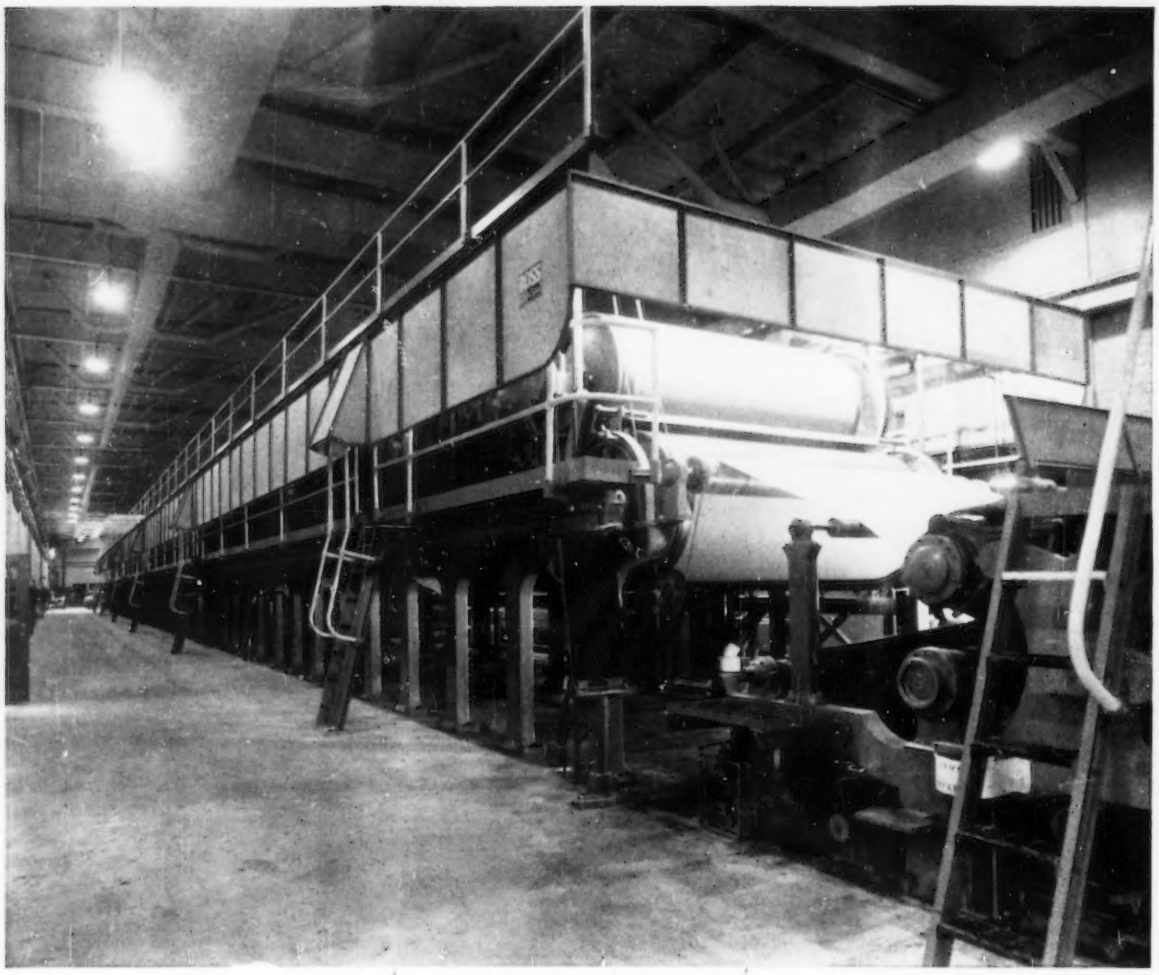

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REMEMBER THESE DATES

JAN. 24-26: Plant Maintenance & Engineering Conference, International Amphitheatre, Chicago, Ill.

FEB. 20-25: APPA Annual Meeting, Waldorf-Astoria Hotel, New York, N. Y.

FEB. 21-24: TAPPI Annual Meeting, Commodore Hotel, New York, N. Y.

MAY 18-21: Third Western International Meeting of the Pulp and Paper Industry, Empress Hotel, Victoria, B. C.

JUNE 14-16: American Pulp and Paper Mill Superintendents Assn. Annual Meeting, Netherlands Plaza Hotel, Cincinnati, Ohio.

PAPER TRADE JOURNAL

Published Weekly Since 1872

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GEORGE E. LOCKWOOD, President and Treasurer
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The Paper Trade Journal for 1955

As we enter upon a new year of service to the great industry whose progress we have been recording for almost three generations, our editors and publisher acknowledge once more their obligations to thousands of subscribers in every part of the world.

To pay our 1955 installment on this debt, our already extensive fact finding facilities are being further expanded to meet the increasingly complex requirements of changing times.

A New Program

A new program of editorial research is under way to ferret out and report significant current advances in production and maintenance.

Never before available equipment performance data will be provided.

During 1955, we will serve as your eyes and ears at every important meeting for the discussion of the industry's problems, and keep you up-to-the-minute on the current news, price and marketing trends and impending events of world-wide significance to the industry.

Everywhere, everyday of the year, it will be our ceaseless effort to bring you first hand verified information that you can use with constantly increasing benefits, in handling your immediate problems and preparing for the many others which are still in the making.

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PAPER TRADE JOURNAL

TRENDS

Overseas Bleached Sulphites Stay Competitive; Unbleacheds Are Up

Pre-Christmas pulp announcements made it clear to U. S. consumers that imported unbleached sulphites will be $5 per ton higher in 1955's first quarter; and that major tonnages of Swedish and Finnish bleached sulphites will hold this quarter's competitive price of $140, freight allowed. Glassine and specialty grades are priced upwards to $145.

To employ the phraseology of the *Swedish Woodpulp Journal*, these "importers have a long-range interest in maintaining a foothold in the American market." Still other pulp dealers who are anxious to hold their U. S. accounts are getting wanted tonnage with difficulty.

Dip In Imports. For the nine months period of 1954, imports from Sweden were down 36 percent from the 1953 period; from Finland 22 percent; and from Norway were 63 percent less. The declining trend in Swedish pulp shipments to the U. S. is likely to continue, in the opinion of the same Swedish writer, "due partly to the higher prices obtained for Swedish pulp in the European market."

Competition From American Pulps. As reported in this column some months ago, competition from North American wood pulps is helping to stabilize world market prices. In view of this competition, which is hopefully looked on as temporary, the Swedish editor stressed the desirability of maintaining a "tolerably steady market progress also in the coming year" and the great importance of not having their production costs forced up in forests and mills.

Seller's Market In Pulpwood. Wood prices at Swedish auctions however average 1 percent higher than in 1953, and in the northern spruce-bearing areas reportedly were up 3.2 percent. "The workmen are asking higher rates of pay in the forest and the industries, and the forest owners are said to demand higher prices for the wood," the Swedish Wood Pulp Journal stated.

In Finland—the one Scandinavian country that is able to expand its wood pulp output from traditional woods and processes—timber cutting during the year ended May 31, 1954 showed an increase of 18 percent over the earlier fiscal year. Prices firmed to $10.50 per cubic meter in the Spring, and were expected to be concluded at $12 per c.m., an advance of close to 20 percent during the last year. Bids at the Forest Service Timber Auctions were called surprisingly high by the *Finnish Paper and Timber* magazine.

Finland supplies spruce pulpwood to the Netherlands, Belgium-Luxembourg, United Kingdom, Soviet Union, Norway, France, German Democratic Republic, German Federal Republic, Switzerland and Turkey.

A recent Finnish Government forestry survey indicated that the woods situation is appreciably better than had been believed. It gave basis for the claim that there is abundant wood for sustained annual yield over and above current consumption for pulp and paper.

See American Pulps As Important to World Supply

In the thinking of pulp market experts here, rising world pulp demand must be met by (1) Finland's expansive industry; by (2) North American exports; by (3) fuller utilization of small-dimensioned timber and logging waste in Sweden and Norway; and (4) by continuous (7-day) operations, which since adoption by Swedish mills reportedly have provided three million more pulp tons this year, two millions for the market, one for integrated use.

Should the Soviet Union begin to export pulpwood from either the vast untouched areas of forest or from those forests which fell to them in World War II, the picture conceivably could change.

From the point of view of the North American pulp industry, it is wishful thinking for anyone to look on American export as a temporary expediency that would take care of the surplus bleached output of new pulp mills till U. S. demand should catch up with the present output, as had been indicated by a Swedish writer.

It is ever good counsel not to underestimate one's adversary. The European pulp producers do well not to gamble on the North American pulps as being an in-and-out competitor in world markets. The direction is definitely in the direction of greater expansion both in the United States and Canada. All new mills are laid out for new capacity; new processes for use of hardwoods and waste woods are designed for continuity of supply for domestic and world markets and new mills are planned.

Prices Are Competitive. So far as price levels are concerned, they will continue to be competitive in world markets. Mid-year offerings of first runs were at first-run prices. Regular runs were priced close to the Scandinavians, taking into account grade differences and the cash discounts allowed by Northern Europe.

The export market has become very interesting to North American pulp producers. It has strengthened the pulp and paper market domestically. To all intents, American pulps are now an established factor in world markets with a stable price policy that is looked on here as good merchandising.

First-Quarter Price Roundup Now About Complete

Unbleached Sulphites Advance $5. As we go to press, the first-quarter's prices are almost all announced. Principal lifts are in unbleached pulps. With the sole exception of some 60,000 tons from Oregon, all unbleached sulphites will be advanced to $125, delivered basis. Canadians, Finns and Swedes alike lifted the price $5 per air-dry ton. In contrast to the Canadian move of a year ago, the price now appears to have jelled.

The marked swing away from unbleached sulphites and to semi-bleached krafts intensifies; and there is no secret about the sharp competition between Canadians and Scandinavians for the shrinking U. S. market.

Semi-Bleached Krafts Up $5. To meet this demand, most kraft mills are marketing semi-bleached kraft pulps, and all have advanced the price $5. With one exception—a new brand at $130—the price is $135 delivered.

Unbleached Krafts Strong. The advance in unbleached krafts ranges by grade from $5 to $7.50. Average qualities are $110 for North American pulps; some are higher, some lower. (See Prices page). The Swedish and Finnish ranges $110 upwards with freight allowances.

Swedish Bleached Krafts. Major tonnage of Swedish bleached krafts will not take the upward swing to $147.50 announced for some primes. The price is $142.50, on dock.

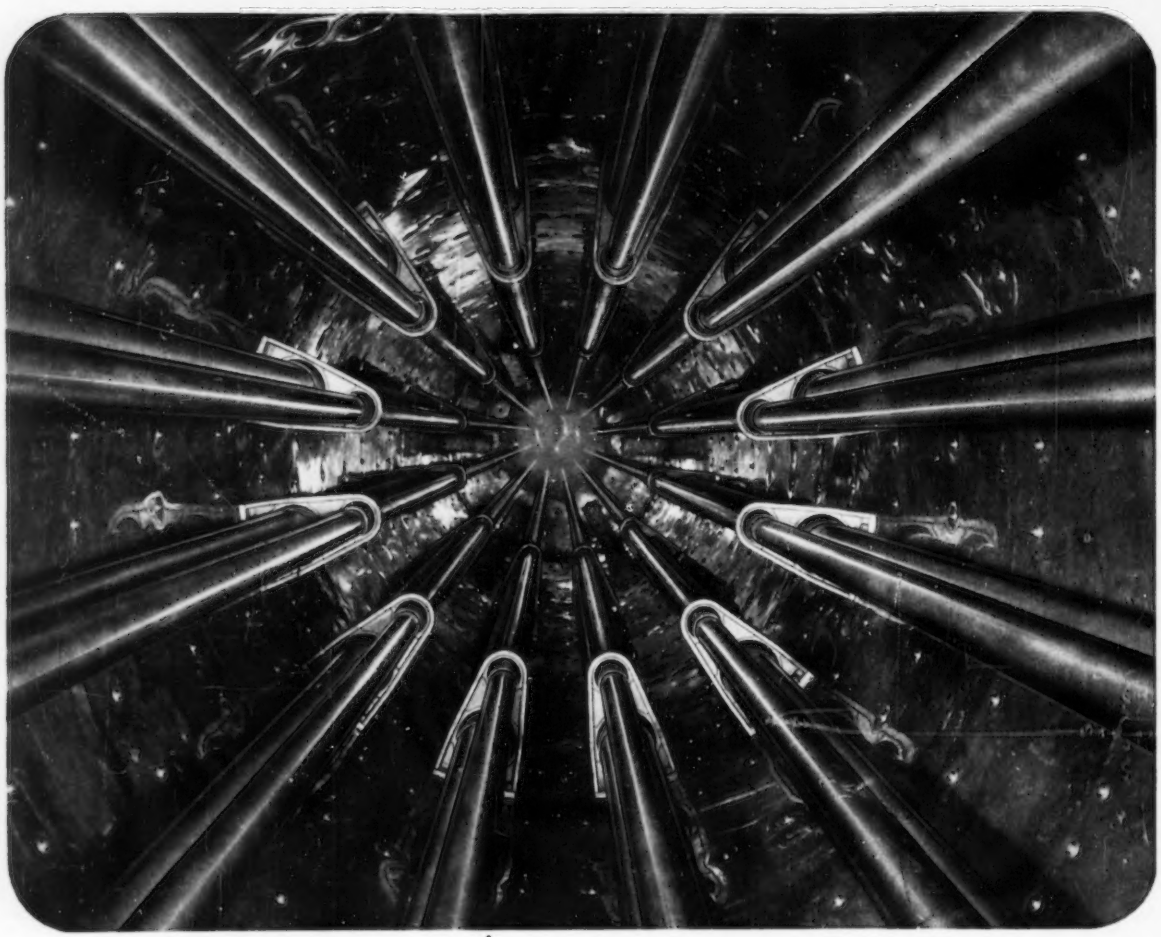
A strong and well-sold pulp market awaits 1955, with paper, board and affiliated industries moving "from strength to strength".

We thank all industry friends for their time and interest in this page, and wish world-wide readers a very happy New Year. —E.P.N.

Paperboard Production (Tons)*

	Dec. 18 1954	Dec. 11 1954	Dec. 19 1953
Production	252,701	258,595	241,648
New Orders	208,891	262,344	212,033
Unfilled Orders	349,727	398,913	371,487
% of Activity	92	94	93

* Source: National Paperboard Assn.



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PAPER TRADE JOURNAL

WEEK OF DECEMBER 31, 1954

Georgia-Pacific To Study Water Source for Pulp Mill

Engineers are preparing to study potential sources of water supply for a pulp mill which the Georgia-Pacific Plywood Co. is considering locating in Toledo, Ore.

This was revealed when the Toledo Water and Power commission and the C. D. Johnson Lumber Co. entered into an agreement to jointly pay the cost of the survey. It was estimated that the work will cost around $1,000 and the firm of Cornell, Howland, Hayes & Merryfield of Corvallis was given the contract.

Engineers will study the water potential of the Siletz river, Mill Creek and the Yaquina river.

Observers declared that sufficient water for the operation of a mill the size of which G-P hopes to establish could be obtained from either the Siletz or the Yaquina. Bringing water in from the Siletz, however, would prove more costly and might entail more expense than the project justifies.

Looked upon with more favor was a proposed plan to dam the Yaquina above Toledo, holding back fresh water and holding out tidal salt water. It was pointed out that this might be done at considerably less cost and with few engineering problems, but a dam would not be designed to create a lake in the valley, but chiefly to hold out the salt water brought in on incoming tides.

It would entail the construction of locks for the passage of small craft and fish ladders. It would provide, it was believed, the thirteen million gallons of water which Georgia-Pacific engineers say will be necessary for the operation of the pulp mill they plan to install.

Georgia-Pacific's recent purchase of the Oregon Mesabi stand of timber in the county, in addition to its own acreage and that acquired earlier in the year in the North End of the county now makes the location of a pulp mill in Toledo practical.

Officials of the firm declare that the timber reserve controlled by the company gives it a 30-year supply, and much longer with modern reforestation practices. The company recently wrote the Toledo Chamber of Commerce, declaring that "our operation in Toledo is now considered a permanent one." It went on to explain that a 10-year program of expanded operation was underway, with possible enlargement of the plywood mill, establishment of a hard-board plant as well as the possibility of a pulp mill.

It was reported that the big lumber company had agreed to help with the financing of the project to bring additional water supplies into the city.

New Bagasse Mill and Converting Plant for Puerto Rico

Two new corporations, with the same principal stockholder, George Leitner of New York, propose to manufacture pulp and paper from sugar cane bagasse and other fibrous materials, and to convert them into finished products such as toilet tissue, paper napkins, towels, paper pads, note books and similar items. Borinquen Pulp & Paper Mills, Inc., would manufacture and sell pulp and paper, with an investment of $200,000 in machinery and factory, while the First Paper Converters of Puerto Rico, Inc., would invest $25,000 in machinery to convert paper and sell converted paper products. The latter corporation estimates the sales value of its products at the contemplated rate of operation will be about $600,000 a year, and Borinquen Pulp & Paper's production at around $750,000.

Beginning January 3, 1955, Paper Trade JOURNAL will be published on Mondays.

This rearrangement of our publishing schedule should result in faster delivery of the news to our readers.

Calcasieu Wins Stream Pollution Court Fight

The Calcasieu Paper Co., Elizabeth, La., has been found not guilty of a charge of polluting the Calcasieu river in an oral opinion handed down by judge Minos Miller in thirty-first district court in Jennings, La.

The opinion was rendered after oral arguments by S. W. Plauche, Jr., of Lake Charles, counsel for defendant, and by Bernard Marcantel, thirty-first district attorney and Joseph V. DeRosa, assistant state attorney general.

The state had charged that the Calcasieu Paper Co. had violated conditions of an ordinance which required it to completely impound all black waters during periods of low flow of the Calcasieu river, and, further, that the condition of the Calcasieu be not changed materially by the effluent discharged from the mill.

The case was tried in Oberlin, La., on November 23, and the judge waited for transcript of the trial before hearing arguments. He found that the Calcasieu river at and below the point of discharge is a beautiful stream and that the state had completely failed to make out a case against defendant.

The state is not allowed to appeal.

Oklahoma Wooing Dierks For Mill Site

Following announcement that officials in Arkansas were endeavoring to obtain state tax advantages to attract the proposed pulp & paper mill of Dierks Forests Inc., it is reported that Oklahomans are engaged in the same pursuit:

According to the Paris, (Texas) *Times*: Civic leaders of Broken Bow and Idabel, Okla. have renewed their efforts to obtain lower taxes for Dierks Forests, Inc., after their first hopes of affecting a settlement were stymied by the McCurtain County excise and equalization board.

At stake is Dierks' proposed $12 million paper mill which the citizens' committee hopes to obtain for Southeast Oklahoma. It ultimately might be expanded to a $25 million investment.

Leaders of the two communities believed that the tax increase, levied against Dierks by the excise and equalization board, might tip the location of the major industry in favor of Arkansas.

O-M Plans $16 Million Expansion at Kenora

A report has been confirmed by Ontario Lands Minister Mapledoram that Ontario-Minnesota Paper Co. Ltd. plans to spend $16,000,000 to expand its mill at Kenora, Ont.

The program will involve installation of a new paper machine, speed-up of the two present machines, and enlargement of all the mills departments.

Manbert Builds New Plant

Manbert Paper Products Ltd., Oakfield, Ont., engaged in the paper converting, waxing, coating and printing industry, is building a new plant of 25,000 sq. ft. in Toronto, Ont. The $400,000 development will provide the company with double the previous facilities and a more efficient continuous flow process for the production of wrappings for foods and other waxed and coated paper products.

New Fourdrinier At Chemical Paper On 24-Hr. Production

The new Bagley & Sewall fourdrinier papermaking machine installed by the Chemical Paper Mfg. Co., is in 24-hour production.

The new machine, 130 inches wide, replaces an 84-inch unit and is designed for higher speed than the old machine, thus substantially increasing the output.

To house the new machine, the No. 1 machine room was lengthened and widened. An overhead crane was installed to service the new machine and another machine alongside it. A new air-drier and other auxiliary equipment have been installed to handle the product from the new machine.

Chairman Reports On Tasman Mill Progress

Sir James Fletcher, chairman of Fletcher Holdings Ltd. and chairman of Tasman Pulp & Paper Co. Ltd., arrived in Vancouver, B. C. recently from Auckland, N. Z. While in Vancouver he held discussions with Sandwell & Co. Ltd., consulting engineers who designed the pulp mill project being erected by Sir James' company near the Bay of Plenty in New Zealand. The new pulp and paper mill will get its supplies from 200,000 acres of pine, firm and larch forests planted 30 years ago by the New Zealand Government. The government has spent £1,500,000 building a new harbor at Mount Maunganui to handle the output, and built 40 miles of railway to the new model town of Kawarau, now under construction.

Sir James said 700 homes have been erected, as well as schools, shops and civic improvements.

The new mill will produce annually 50,000 tons of pulp, 75,000 tons of newsprint and 70 million board feet of timber.

A notable feature of the project is that it will use geothermal steam power from the great New Zealand volcanic thermal region at Rotorua.

It is anticipated that there will be sufficient steam for generation of 39,000 kilowatts of power, which will make the mills completely independent of the state supply.

Sir James said that Sandwell & Co. Ltd. have also placed all the contracts for a second pulp mill to be built for Caxton Pulp & Paper Mills, which will get its pulp supplies from the Tasman company and produce all New Zealand requirements of tissue.

Ferguson Predicts Industry Rise in 1955

Roy K. Ferguson, president of St. Regis Paper Co., predicts the paper industry will have 10 per cent to 12 per cent higher sales next year than in 1954 and will show 8 per cent to 9 per cent higher net, according to a report in the *Wall Street Journal*.

Chile Will Ration Newsprint

In Santiago, Chile, last week, President Carlos Ibanez decreed the creation of a newsprint rationing board despite strenuous opposition from the Chilean press. Minister of Economy Jorge Silva who drafted the decree said newspapers were "spending newsprint too freely."

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of United States paper production to mill capacity for the week ending December 18, 1954, was 97.2 percent, compared with 96.2 percent revised, for the preceding week. The ratio was 94.8 percent for the corresponding week a year ago. Mills producing newspaper exclusively are not included.

The paperboard production ratio for the week ending December 18, 1954, was 92 percent, compared with 94 percent for the preceding week, and 93 percent for the corresponding week last year. The Thanksgiving holiday is included.

(Detailed statistics on page 39.)

Reduce Fly Ash At Rhinelander

New equipment costing $40,000 has been installed to improve the results of burning of sulphite liquor at Rhinelander Paper Co., Rhinelander, Wis., announced today. Need for this developed from the company's large-scale program for utilizing sulphite liquor which formerly was discarded to the Wisconsin River, according to B. R. Cancell, president of the firm.

Centrifugal fly ash collectors have just been added to two boilers to solve a problem in the final step of this mill's sulphite utilization program. The Rhinelander company's subsidiary Lake States Yeast Corporation now completely processes all collectible sulphite liquor to extract useful products, thereby keeping it out of the stream.

First, microscopic yeast organisms are propagated in the liquor to convert its wood sugars into dried yeast valuable for human and animal nutrition and for pharmaceutical uses. Next, the desugared liquor passes through an evaporator plant that rids it of excess water, concentrating it to 50% solids and for some purposes making it into a dry powder. Then the desugared concentrate is sold to manufacturers of adhesives, dispersants and other chemical products. Finally, any unsold concentrate is burned as industrial fuel in two specially equipped boilers, replacing coal.

Fly ash resulting from the combustion occurred in troublesome quantities at times when both of the mill's liquor-burning boilers were operating. The new equipment operates on the same general principle as a cream separator. It collects the finely divided lime ash in a hopper before the flue gas is released to the atmosphere. Collected fly ash then is disposed of along with other ash from the power plant.

Pollution Committee Grant Charmin More Time

State authorities have granted Charmin Paper Mills of Green Bay, Wis., an extension of time allowed for completing its $2,500,000 plant which will manufacture yeast from sulphite liquor.

Delivery delays by a few suppliers as well as unforeseen complications in final stages of construction have slowed down the big building project from the originally expected completion date of December 31, 1954. Order from the Committee on Water Pollution and the State Board of Health, dated December 21, instructs Charmin to complete construction not later than June 30, 1955. The revised order also requires the company to notify the state when the liquor collection installation and the yeast plant proper are completed.

PAPER PEOPLE

H. Hadley

W. Csellak

F. Barber

Gardner Promotes Three

Gardner Board and Carton Co. has promoted Fred Barber to manager of its Middletown plants. These include a carton plant and two paperboard mills. Mr. Barber formerly was superintendent of the carton plant.

Harry Hadley, formerly manager of the two mills, has been promoted to assistant manager of all Gardner Middletown plants, including the carton plant. Mr. Hadley also will continue work in manufacturing services to Gardner's paperboard sales department and with paperboard customers.

William Csellak, formerly assistant to the vice-president, operations, has been promoted to Mr. Barber's former job as superintendent of the carton plant.

Mr. Barber was formerly technical supervisor of paperboard operations at the Manayunk plant of Container Corp., Philadelphia, Pa. Later he did technical sales service work for paper mills and allied industries for Stein, Hall & Co. During World War II, Barber went to Washington, D. C., with the pulp and paper division of the War Production Board. He later was transferred to the Navy Department to become chief of the container division. After the war he became manager of new products development for American Coating Mills, Elkhart, Ind. Before coming to Gardner, as carton plant superintendent, he was manager of American Coating's folding carton and set-up box plant at Grand Rapids, Mich.

Mr. Hadley has been associated with Gardner paperboard manufacturing since he joined the company in 1922. He has successively held all the major manufacturing and management positions in the Gardner Middletown mills since that time. In 1948 he was appointed manager, Middletown Mills. Mr. Hadley is the current president of the American Pulp and Paper Mills Superintendents' Assn.

Mr. Csellak joined Gardner in 1949 in a management training program. In 1952 he became staff assistant to the technical director and in 1953 staff assistant to the vice-president, operations.

Lampert Retires from Zellerbach After 48 Years

A. J. Lampert, who has been manager of the printing paper department of the Crown Zellerbach Co. in Portland since 1915 and with the company for 48½ years, is retiring from the company.

He will be succeeded by Richard Word who has been employed by the Crown Zellerbach Co. as salesman in the Portland area for the past 35 years, and has worked with Mr. Lampert much of that time.

Gair Transfers Tietgen

W. Roy Tietgen, has been transferred to Savannah as purchasing agent for Southern Paperboard Corp. A native of Brooklyn, Mr. Tietgen entered the employ of Robert Gair Co. March 5, 1928. He was transferred to Savannah from New Haven.

Oxford Makes Changes In Wood Department

Robert R. Drummond, general manager, wood department, Oxford Paper Co., Rumford, Me., has announced several changes in duties and responsibilities of the personnel in the wood department.

John L. Hartranft, who was forester, for the company, includinp Cape Breton Div. and the Nashwaak Pulp & Paper Co., Ltd. In his new post, he will have supervision of all forestry work, company lands and the administration of all matters pertaining to the purchase of stumpage contracts and leases of property. He will also assist in general office administration and wood procurement as occasion demands.

Arthur F. Lincoln, who was forester fieldman was appointed superintendent of wood procurement for Oxford, including Cape Breton and Nashwaak. He will supervise the procurement of pulpwood in areas including production, quantities, scaling, quality, and shipping. He will also assist in general office administration and on wood procurement problems.

Charles R. Atwood who was superintendent, wood department, has been appointed superintendent, local division at Rumford, with no change in duties and responsibilities. As in the past, he will have supervision of the pulpwood and lumber procurement in the local truck area.

Claude H. Mackay, who has been assistant manager, Canadian Division, since 1940, has been appointed superintendent, Canadian Division, with no change in duties and responsibilities.

St. Regis Transfers Kussman to Tacoma

James E. Kussman, formerly manager of the Panelyte Div. plant of St. Regis Paper Co., Kalamazoo, Mich., left December 11 for Tacoma, Wash., where he has been transferred to assume executive duties in the St. Regis kraft pulp and paper mill there.

Abbott Heads Alliance Paper Mills

Donald Stafford Abbott has been elected president of Alliance Paper Mills Limited and its subsidiary Don Valley Paper Co. He has also been elected a director of the parent organization Howard Smith Paper Mills Ltd. In recent years Mr. Abbott has guided the fortunes of the new plastic "arborite" as general manager, more recently as president of The Arborite Co. Earlier this year he was appointed development engineer for Howard Smith Paper.

Hines Promoted At Albemarle

Arthur W. Hines has been promoted to converting superintendent in charge of converting operations of the Albemarle Paper Manufacturing Co., Richmond, Va., and Murrell A. Nuckols has been advanced to production co-ordinator for the converting plants and will serve as staff assistant to Mr. Hines.

Former multiwall bag plant superintendent, Mr. Hines has been with Albemarle since 1930. He began as a machine operator. A native of Richmond, he will continue to act as superintendent of the multiwall bag plant and also will be in charge of the printing and waterproof paper plants.

Mr. Nuckols began his employment with Albemarle in 1951 as a mill clerk. He has advanced through the positions of department foreman and assistant superintendent of a converting plant.

Canco Names Lueck New Vice-President

Dr. R. H. Lueck, formerly general manager in charge of American Can Co.'s research and technical department, has been elected vice-president in charge of the department, it was announced by William C. Stolk, president.

The scientist, who has been with the company for 32 years, will continue to make his headquarters in New York. The position to which he has been elected is a new one in the firm, Mr. Stolk said.

A graduate of Carroll College at Waukesha, Wis., Dr. Lueck received a master of science degree at the University of Wisconsin and started with American Can in 1922 as a research chemist in the firm's Maywood, Ill., laboratories. He later served as manager of the company's San Francisco laboratory and in 1934 was transferred to the Hawaiian Islands where he became manager of the company's operations.

Dr. Lueck was appointed manager of the research laboratory at Maywood, Ill. in 1936 and seven years later became director of research. He served as manager of sales for Canco's Pacific division between 1944 and 1950 when he was named general manager of the research and technical department in New York.

A. S. Canfield Retires

Albert S. Canfield, of 17 Amherst St., is retiring the end of the month from the Parsons Paper Co., with which he has been associated for 52 years.

Mr. Canfield is assistant treasurer and office manager of Parsons. It is the only place he has worked.

He started working at Parsons as a clerk at the age of 16, when the only piece of mechanical equipment in the office was a single typewriter.

Mr. Canfield marvels at the advances made in office work procedure in the past half century. Adding machines, comptometers and the like were unheard of things then. The typewriter was a luxury.

His office associates gave him a party Wednesday evening, December 29.

A. P. Jones Returns To American Viscose

Allen P. Jones has left Ben-Mont Paper Co., Bennington, Vt., to return to American Viscose Corp. at Fredericksburg, Va. as head of the product converting section. Mr. Jones was head of American Viscose's finishing department from 1950 to 1952. Prior to that, he was associated with Union Bag & Paper Co. for 15 years.

OBITUARIES

Frank P. Knack, 59, Midwestern district manager for S. C. Huyck & Sons, died December 21 in Saratoga Springs, N. Y. A resident of Geneva, Ill., he was in the East on business for the firm, which manufactures papermakers' felts and industrial fabrics.

Joseph L. Ripper Sr., 50, general superintendent of Superior Folding Box Co., died of heart disease December 17 at his home in St. Louis, Mo. He had been associated with the folding box company since he was 15.

Alex Phail, 71, retired sales manager of the Port Huron Sulphite & Paper Co., died unexpectedly December 17 in Port Huron, Mich.

Mr. Phail came to work for the Sulphite firm in 1924. He retired in 1951.

E. S. Reece, traffic manager for Werthan Bag Corp., Nashville, Tenn., died December 19 at his home in Nashville. He had held his last position with Werthan for 17 years.

Daniel W. Moos, 76, Glen Falls, N. Y., died December 22 after a short illness. For many years he was superintendent of the block cutting department in the wallpaper plant of Imperial Paper & Color Corp., Glens Falls.

William C. Frye, 77, a Director of Chain Belt Co. and its former president died November 16th. He had been associated with Chain Belt Co. for 60 years. In 1895 he joined the company as its first office boy. In 1916 he became president of the firm. Mr. Frye retired as president of Chain Belt Co. in 1923, but continued as a member of its Board of Directors.

In addition to his affiliation with Chain Belt Co., Mr. Frye served as a director of several other prominent midwest manufacturers.

His wise guidance was invariably sought in community affairs. A citizenship award presented to Mr. Frye in 1953, cited, ". . . that no worthy cause, civic or cultural or philanthropic ever sought his personal assistance or his financial aid in vain."

Elmer E. Fairchild, Sr., 81, founder of the E. E. Fairchild Corp., Rochester, N. Y., manufacturer of playing cards and other paper products, died December 21. Almost until the time of his death, Mr. Fairchild continued to play an active role in the operation of the business, serving as chairman of the board of directors. His son, Elmer Fairchild, Jr., is president.

Edward B. Sheaffer, vice-president and western representative of Missisquoi Corp., died suddenly at his home in Bensonville, Ill., December 10.

Mr. Sheaffer joined the Missisquoi Corp. in 1928 and was located in Chicago from that time until his death, with the exception of one year, 1932. That year was spent at the mill in Sheldon Springs, Vt.

L. Rufus Koons, well known paper broker, died in Wilkes-Barre, Pa., December 13. His father, the late J. R. Koons, was a pioneer paper manufacturer in the Wilkes-Barre area.

James E. Skane, 63, of Clifton, N. J., an engineer and executive of the Manhattan Rubber Division of Raybestos-Manhattan, Inc., Passaic, N. J. died on December 15 after a prolonged illness. Mr. Skane started with Manhattan 34 years ago as a laboratory rubber specialist, and did considerable work on rubber compounding and textile improvements. He later became a sales engineer on rubber specialties. During World War II he served in the office of the Rubber Director, Department of Commerce.

Johannes Westergaard, 58, president, Johannes Westergaard & Co., woodpulp and importing firm and president of Assn. of American Woodpulp Importers, plunged to his death yesterday from his 19th floor office in the American Building, 1270 Sixth Ave., between 50th and 51st Sts., New York City.

Police listed the death as apparent suicide after finding a farewell note on his desk. Friends said Mr. Westergaard had been in ill health.

Use of Instruments at Newton Falls

Alfred Wagner

Instrument Engineer

Newton Falls Paper Mill, Inc.

It would be much too presumptuous to discuss all the instruments and controls we use in the different operations of our papermaking process. Therefore, after summarizing our operations with particular consideration of instruments and controls, I shall concentrate on a few of them, as they are used in our mill at Newton Falls, N. Y.

De-inking Plant

The process in our mill starts at the de-inking plant with the re-pulping, washing and bleaching of waste paper. This plant was completely re-designed recently. Relatively few instruments are used here. In this operation, the most important measurements seem to be the temperature in the bleach chest and the pH of the stock leaving the de-inking plant. Therefore, both of these measurements will be extended to automatic control in the near future.

We intend to control the pH of the stock leaving the de-inking plant through the use of gaseous sulphur dioxide, thus killing three birds with one stone: (a) control the pH, (b) use the SO_2 as anti-chlor, and (c) achieve a higher brightness of the pulp by further bleaching action.

Stock Preparation

Further along in the process is the blending chest, where the stock for the paper machines is made up mainly from pure sulphite pulp, de-ink stock, rosin size, sodium aluminate and aluminum sulphate. The size and the alum are measured into the chest by positive displacement meters. This point of instrument application will be expanded to include automatic batch control to make for more uniform stock preparation. For the same reason, we have level controls, and flow meters for the water used in preparing the stock at every chest.

The stock enters the mixing box at the paper machines through a jordan. Here again a feature is added for improving the uniformity of the paper. The position of the jordan plug is controlled automatically so as to keep the power consumption of the jordan constant.

Paper Machines

Just before the stock flows into the mixing box, a small amount of alum solution is added for the final automatic control of the pH in the paper. The respective measurement for the pH is made in the white water coming from the wire.

After having left the wire, the sheet is fed through air-loaded presses before entering the first section of dryers. The steam supply to the paper machines, and specifically to the first dryer section, is kept automatically constant at approximately 20 p.s.i. The section itself is controlled three-ways:

a—A certain pressure difference is maintained automatically between the supply and return headers of a part of the dryers.

b—Another part of the same dryers is kept at a constant temperature.

c—The moisture content of the paper as it leaves the section is controlled according to the tension of the sheet.

The starch in the size tub following the first section of dryers is controlled to a constant temperature, and the paper is dried again in the second section.

A moisture control by tension does not work here. The re-moistening of the sheet apparently spoils the relationship between tension and moisture content. A control that works on the signal of an electronic moisture meter, however, has proven very satisfactory.

The felt dryers are kept at a constant temperature by another automatic controller. Also, the speed of the machines is measured and recorded.

Coating Plant

The paper leaves the machine room by way of the finishing room to the customer or to the coating plant. Paper that goes to the coating plant receives a starch for casein coat on a modern Waldron high-speed air knife coated. This coater can take a sheet more than 100 inches wide.

The coated paper is dried with hot air in a big oven equipped with four heater units. Two heaters are controlled to a constant temperature. The other two units are controlled according to final moisture as measured by the same kind of electronic meter as at the paper machines. Incidentally, the speeds of the coating unit, the conveying mechanism in the oven and the winder unit are synchronized by a photo-cell device according to the height of a paper loop produced on either end of the oven.

Supercalendering

Finally, the paper is supercalendered. So far we have neither continuous measurement nor automatic control at this last stage of operation. However, considerable time is being spent working out of a method that will give us closer control over the operation of and performance of the calenders. We hope to achieve this control by the continuous measurement of either moisture or gloss or both.

I have mentioned only the more essential controls. There are many other controls of minor and, yet, obvious importance.

Discussion

In order not to get lost in too many problems, we are restricting ourselves to discussion of the measurement and control of: a) basis weight, b) moisture content, and c) pH.

We chose these variables for the following reasons:

a—They are of almost equal importance throughout the industry.

b—They are modern measurements, and controls which have not yet been incorporated in standard mill equipment.

c—There is a close relationship between these variables.

d—These variables involve the greatest problem of the immediate future: uniformity.

Measurement and control of these variables seem to be a good example of efficient application of modern instruments. We think that it is no longer possible to meet today's requirements for close tolerances without them. We have found that efficiently employed instruments make work much easier, more accurate and even more efficient. They enable us to compete successfully with bigger companies.

Basis Weight

For the measurement of basis weight, we employ beta gauges at the dry end of our paper machines. This device of the modern atomic age, utilizes the only

scientific principle—known so far—that is able to give a specific and accurate measurement of weight of a moving product by direct mass measurement. It works in the following way:

A beam of beta rays—that is very fast moving electrons—is emitted from a radioactive source for delivery into an ionization chamber mounted above the radioactive source for their reception. Before the rays reach this chamber, they pass through the material to be measured—in our case, the sheet of paper. A part of the rays is retained by the paper.

As the emission of rays from the source is considered to be constant, the amount of rays allowed to pass through the paper also is proportional to the weight. The bombardment of the gas molecules by the beta rays in the ionization chamber results in gas ions which cause an electric current to flow. This current is measured by an electronic device using a vacuum tube.

These facts permit us to understand what happens when an instrument is "zeroes in." A 3-position switch is provided at the instrument for that purpose. The number 1 position is for the standardization of the vacuum tube circuit. The number 2 position is for the ionization chamber, including the radioactive source and the outside conditions, mainly temperature and humidity. Standardization is accomplished by adjusting resistors in the respective circuit. When an instrument has been corrected properly in these two positions (and which was calibrated accurately and correctly in the first place), it will always give the correct weight reading.

Calibration

Before proceeding to speak about calibration, I want to tell how an additional stability check can be carried out. Here is the procedure: Put the 3-position switch in the number 3 position, the operating position. Then, without having any material whatever in the measuring gap of the gauge, turn the knob for the adjustment in the number 1 position clockwise until a reading on the instrument dial is obtained. This reading drawn by the recorder connected to the gauge should show a straight line.

Calibration should be carried out with greatest care and accuracy. This instruction cannot be overemphasized. It is almost impossible to calibrate the set at the running machine.

The law of averages enters into the calibration in two different ways. It is the cause for the beta gauge not giving a "point" reading for a certain weight. It makes the needle of the gauge play around an average value. The average value is the true reading for a particular weight.

The paper samples used for calibration are weighted on a conventional type scale to obtain the average weight of the whole sample sheet. However, when applying a sample on the beta gauge for the purpose of calibrating it, only a fraction of its area is exposed to the beam of rays. Therefore, ultimately a true weight reading is obtained only for this part of the sample.

The only way to compensate for any discrepancy is to use a number of samples of approximately the same weight, taking a number of readings with each of them, and anticipating that the actual weight of the measured sample area and the readings of the gauge will lie as many times above the average as it will below. After having done that for two points of the dial, preferably at the lower and upper end of it, the obtained points are plotted on graph paper and a straight line is drawn through them to best satisfy the law of averages.

We purchased one of the earliest beta gauges for application on a paper machine. Since then, improvements have been made in the design. To the best of my knowledge, these improvements concern the increase of area of measurement and automatic standardization.

When considering the problem of measuring basis weight on a paper machine that is running, we are led back to the law of averages. This seems to be *the* problem in the application of the gauge. Many people are not able to rely on this type of device. It is not so much a question of accuracy of the device, but rather that the paper leaving the machine is not as uniform as the instrument is accurate. What I mean is this: Changes and fluctuation of weight occur lengthwise in the sheet as well as in cross direction.

The weight of the paper moving at a high speed through the sensitive part of the gauge varies more than we think or like to admit. However, to check the instrument, we want to rely on one tiny sample in comparison with the amount of paper that is measured as to its average weight by the beta gauge. For anybody thoroughly familiar with the principles involved, this procedure must seem ridiculous. It is like measuring the average temperature of the ocean in one spot in Jamaica Bay.

On the other hand, we are not blind to the fact that instruments, including the beta gauge, show drift. That is why zero adjustments are provided.

Normal drift is not serious. However, it is always good practice to check an instrument as often as possible, and especially after a weight variation has occurred that should be corrected. After checking, rely on the instrument.

The ultimate goal of instrumentation is automatic control. Possibilities offered by the paper industry for the beta gauge do not seem too bright. The sensing element of an automatic weight control should always be as close as possible to the stock gate. We have no experience in the use of the instrument in the wet section of the machine. We doubt that such an installation would be successful. It would necessitate the control of water content at the point of application, too.

Scientific principles should be adhered to in the application of instrumentation to continuous measuring devices employed at the moving web.

A really unobjectionable scientific and specific measurement device for moisture content applicable directly at the production line is not available. However, there is one principle that may be applied in the development of such a scientific instrument. It is based on changes in dielectric properties, using a frequency of 1000 kc. or higher.

Automatic Moisture Control

For approximately nine months, we have been using successfully an automatic moisture control at our coaters and paper machines. These controls have permited us to keep the moisture content of our paper within limits of at least one per cent. The measuring part of the controls is a device which senses changes in dielectric properties of the paper. Although a patent on that principle was issued early in the century, it was not until recently that the necessary electronic components were developed to a point where construction dependable enough for industrial application was possible.

An instrument of this kind can be calibrated with paper samples in the same way as the beta gauge. This instrument, however, responds to weight and furnish variations. That is its main obstacle in becoming a device for specific moisture measurement.

Weight variations do not offer a great deal of difficulties. The instrument has a reproducible setting for different basis weights as run on the paper machine. Variations within these weights and their normal tolerances do not incur a serious error in the moisture reading. Most of the materials used in the furnish of the paper do not affect the accuracy of the meter appreciably. Some materials, however, affect its accuracy materially. Therefore, the instrument must be calibrated with samples of the same paper as is being made on the machine.

Apparatus with high frequency circuits are delicate devices. Unless designed with utmost care, they may require more service and attention than the usual industrial instrument. This disadvantage will be overcome. It is merely a matter of development and construction.

The problem of moisture control in our mill is rather complicated. The dryers of our paper machines are divided into two sections with a size tub in between. The paper is re-moistened and dried twice after leaving the machines—once in coating, and once in supercalendering. A tight moisture control system for these operations should have control in the following places: 1) after the first section of dryers; 2) after the second section of dryers; 3) at the coaters; and 4) at the supercalenders.

All of these positions, except at the calender stacks, are controlled in our mill. The steam supply to our machines is kept at a constant pressure of approximately 20 p.s.i. Actual moisture control begins with a tension roll in the first dryer section.

The tension of the paper as incurred by shrinkage is a function of the moisture content. Moisture variations result in a change of position of the tension roll. The movement of the roll is transferred by lever action to a pneumatic controller which works the steam regulating valve.

Samples and measurements have shown that the paper leaving the first dryer section stays within limits of one-half of one per cent.

The control operation at the second dryer section is basically the same as that of the first. However, here moisture variations are converted into an electric signal which feeds into a combination of electronic recorder and pneumatic controller which actuates the steam valve.

The automatic control of moisture on the coaters is of basically the same design as the control on the paper machines. Originally, such control as we had was obtained by varying coated speed manually. However, while working an automatic temperature control for the coaters, a temperature variation of 10 degrees at the last heater unit was noticed to produce ac hange in moisture of approximately one-half of one per cent. This observation led to the installation of an automatic control. With some changes in the original set-up, we are now able to keep the moisture content of our one- and two-side coated sheets, ranging in basis weight from 44 to 120 pounds, within limits of one-half of one per cent for almost 100 per cent of the running time of the coaters. Incidentally, insufficient control range was obtained through the control of one heater unit. The parallel control of two heaters brought the desired result.

pH Control

The use of sodium aluminate in our stock preparation calls for a high and uniform pH valve. Inadequate pH control, we believe, is the reason why some mills are not able to use this raw material. At a pH of less than 4.8, much filler would be lost through the wire. Without automatic control, we found it rather difficult to keep the pH higher than 5. With automatic control, we are running some of our paper at 6.0 and above. It should be stated that an increase in wire life has resulted from high pH operation.

The electrodes for measuring and controlling pH are immersed in the white water close to the wire. This location insures the pH in the final product to be the same as measured. Actual control is finally performed by a pneumatic controller working on a diaphragm valve located in a line feeding aluminum sulphate into the stock. The accuracy of this control is one-tenth of one pH unit up to a value of 6.5 for most of the time.

We plan on having two sets of such assemblies at each machine—one set serving as a stand-by in case of a breakdown of the set in operation. With such a set up production can go on at all times without an interruption in control.

We also keep a spare meter and controller in stock as a policy of good maintenance. Incidentally, for the same reason, we keep a spare on most of our instruments.

So much for the actual operation of the different instruments. Now for the results we have been able to obtain with them.

Close Relationships Demonstrated

Instruments prove the close relationship between basis weight, moisture and pH. They also aid the research department. For example: Not very often, but once in awhile, a pH control starts cycling. I shall not discuss the reason for that cycling now but rather the consequences.

The beta gauge and the moisture meter under such a condition, will do the same thing as the pH meter and is exactly the same pattern. This chain reaction has proven to us that pH affects the retention and freeness of stock—also has emphasized how necessary it is to measure and control these three paper properties.

Now some more words about uniformity. We are very hopeful of solving the problem of uniformity in machine direction very soon. However, some more work, and the more difficult, is still to be done on improving the uniformity of the sheet in cross direction.

Profile Problem

We know that we have to attack the profile problem next and that the attack must be more thorough than would have been possible up to now with conventional methods. Like many other mills, we have already spent a lot of time on the problem and with equally poor results. The reason: we do not know what actually is happening every moment profilewise at and on the machine. There is no simple relationship between the moisture and the weight profile. Within certain very narrow limits of oven-dry basis weight variation, the moisture apparently follows the weight. On either side of these limits, however, the moisture seems to go contrary to the weight. Points of highest weight have the least moisture and vice versa.

We could obtain some knowledge about the profile by taking moisture readings, at different points all the way across the sheet. The use of scanning devices on moisture meters would permit such readings to be made; but, while scanning devices would be in use for such a purpose, the control instruments would be shut-down and there would be no indication as to what was happening to the over all moisture in the sheets. Also, measurement of profile in this way is not continuous—it is a number of single measurements.

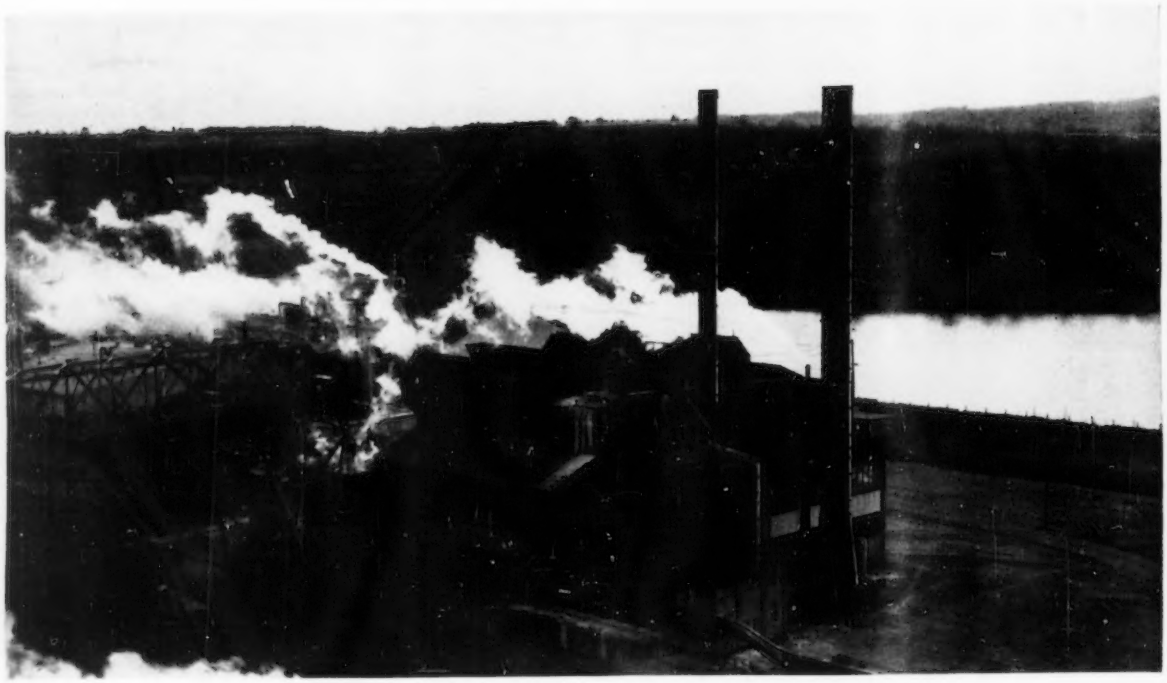
It was not known what was happening at the machine moisture and weight-wise until we had the respective measurements to show us. To know what is happening profilewise, we will have to have a profile meter that will record both moisture content and oven-dry basis weight. This requirement, because of the complicated relationship between moisture content and basis weight, would necessitate two instruments with a manifold of measuring points all the way across the sheet. One instrument would record moisture content—the other, oven-dry basis weight—at every measuring point.

Now, we are back again to automatic weight and moisture control. Eventually, we shall bring the two profiles within the limits we want. However, it will be impossible to obtain the ideal profile with zero variation. Therefore, for greatest possible accuracy, we consider it necessary to effect automatic control of weight and moisture from the respective average value in cross direction.

We offer herewith to the instrument industry a nut that is rather hard to crack.

Yet, without these control devices, there can be no completely or highly automatic paper machine. Also, without them, the paper industry will not be able to keep up with the ever increasing requirements of uniformity.

Presented before the Fall Meeting of the New York-Canadian Division of the American Pulp and Paper Mill Superintendents Association held at Saranac Inn, Upper Saranac Lake, N. Y.



Silene Production Unit at Columbia Southern's Barberton, Ohio, plant.

What you can expect from Silene in Paper

Arthur M. Brooks

Consultant, Columbia Southern Chemical Corp.

This is our second article on this new paper pigment. Last February we presented the first published report on it.

The use of Silene constitutes a new approach in obtaining certain desirable properties in various grades of paper. Although often mistaken for filler type material, Silene actually achieves entirely different effects when added to the paper furnish than those obtained with clays and other inert pigments.

Silene is a hydrated, precipitated calcium silicate of fine particle size. It is offered to the paper trade as a finely divided white powder suitable for direct addition to papermaking furnishes.

When Silene is mixed with water it disperses readily to a smooth slurry which is lump-free and very slow settling. It may be made into a slurry before being added to the furnish or added directly as a dry powder. Upon being mixed with the fibrous furnish it disperses thoroughly and attaches itself to the fibers. When used in sized papers it is desirable to precipitate the size with alum before adding the Silene, so that the attachment of size to the fibers may take place before the attachment of the Silene.

Silene has an alkaline pH and therefore when the paper is to be run on the acid side, the pH of the furnish must be adjusted with alum to the desired value. Usually it requires about .75 parts of alum to react with 1 part of Silene, but this amount may vary with the furnish. In some cases, where the furnish is acid before the Silene is added, no additional alum is required.

Effect on Paper Properties

Due to the attachment of Silene to the fibers improvement in tear resistance has been found and also increased retention of inert fillers and of fiber fines. This latter effect is usually a contributing factor in producing improved surface

smoothness. In some grades of paper improved stiffness of the paper has also been found.

Opacity and brightness improvements have been commonly experienced with Silene. It has been used to replace titanium dioxide in ratios varying from 2 to 3 parts Silene to 1 part of titanium dioxide while maintaining the same opacity and brightness. This usually shows a cost advantage in favor of Silene. Where brightness has been brought above the desired point, further improvement in opacity may, of course, be obtained by the proper use of tints.

Silene also produces an increase in bulk which is desirable in many printing papers. Further bulk improvement may be obtained by reducing the degree of calendering due to the improved smoothness obtainable with Silene.

In any particular furnish the most suitable amount of Silene to use will depend upon the type of fibers, the grade of paper, and the quality improvements desired. The amount required to produce the desired effect is usually in the range of 2 to 6 percent of the weight of the fibers. About 2 percent is recommended as the usual minimum amount in order to produce a noticeable commercial effect. When replacing titanium dioxide in the lower range of usage, about 3 parts to 1 part of titanium dioxide may be required, while in the higher loadings, 2 parts of Silene may suffice.

Papers made with Silene have shown excellent printing properties in the usual printing processes and also in spirit process duplicators; in general, superior to the results obtained with similar papers made without Silene.

The quality improvements producible with Silene have been demonstrated in many mills and in various types of paper. It is being regularly used in continuous production and in the past few years several thousand tons of Silene have been used in commercial grades of paper.

Origin of Silene

Silene is a development which has come from the pioneering effort of Columbia-Southern Chemical Corporation in the manufacture of finely divided silica pigments. By means of large volume production it has been possible to develop high quality silica pigments which can be sold in a price range which makes them attractive for industrial use. The first use of Silene was in rubber compounding for which it was specifically developed and in which it has become a standard reinforcing agent. This hydrated calcium silicate also appeared to have desirable properties as an additive in paper-making but due to the

If you've ever had foam on your paper machine wire, you know how costly it can be. Keep that cost down with De-Airex!

De-Airex is a liquid de-foamer that kills the bubbles before they build up. It's easy to handle, too. De-Airex remains stable—without continual stirring—without fussy premixing—without worrying about pH conditions in your area!

We've arranged tests for many mills that resulted in convincing demonstrations of De-Airex's effectiveness. Try it under your own conditions. Get in touch with the Houghton Man or write directly to E. F. Houghton & Co., 303 W. Lehigh Avenue, Philadelphia 33, Pa.

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great demand for Silene during World War II it was restricted by priority to the rubber industry only. Following the war the facilities for producing Silene were greatly expanded and, with the more adequate supply thus available, work was actively pursued to adapt Silene for use in the paper industry.

Through the work of Columbia-Southern's large research and development laboratories, which are located near the Silene plant in Barberton, Ohio and the corporation's own pigment and paper chemists and consultants, modifications were made in the characteristics of Silene. In general, the chemical composition was unchanged but the physical characteristics as to particle size, particle surface area, adaptability for water dispersion, and fiber attachment were tailored especially for use in paper. Further adaptations were made on the basis of actual paper machine trials. The inherent advantages of the paper grade Silene were so outstanding that the interest of paper manufacturers was actively solicited. In a relatively short time many practical demonstrations were made and Silene firmly established in many grades of paper.

Several paper companies which are users of Silene have approved the following brief statements of their experience with it.

Machine Coating Body Stock

"Silene has been used on a sustained basis over a period of several months in the production of machine-coated magazine papers. Conditions employed have been changed from time to time and the results obtained have varied accordingly. Under the better conditions the optical properties obtained in a 40 lb. sheet have closely approached those normally obtained in a conventional 45 lb. sheet."

"Silene has been tried in machine coated magazine stock on an experimental basis. Results obtained to date indicate that under optimum conditions it is possible to reduce basis weight of the paper by 10 percent without sacrifice in optical properties. The development program is continuing."

Bond Paper

"Silene has been used in bond sheets for development of optical properties without adverse effects on the sheet quality. Savings in the range of $1.00 to $3.00 per ton of paper have been realized in achieving the desired optical properties."

Offset and Mimeograph Paper

"Silene has been tried experiemental ly in offset and mimeograph sheets. I has been used to develop opacity and brightness. The results obtained indicate that the desired optical properties can be obtained without sacrifice in quality and with savings up to $5.00 per ton of paper."

"Silene is used in offset papers to obtain brightness. These effects have been obtained at approximately the same cost as by other means. However, the Silene has provided additional benefits in the field of printing quality improvemene. Work is underway to try Silene in other line products."

Conclusion

Silene, in addition to the papers specifically mentioned above, is also being used with excellent results in other grades, such as newsprint, board specialities, boxboard top liner and uncoated book.

Silene has made a permanent place for itself among paper making materials and Columbia-Southern with its large and expandible production facilities is in a position to meet the growing demand and to provide complete technical assistance to paper makers through its own staff of practical paper specialists.

The paper used in this issue of Paper Trade Journal was made with Silene.

Pulpwood Floating Loss in the River Kemi

Arno Tuovinen

A Summary

In 1954 Metsäteho (Forest Work Study Section of the Central Association of Finnish Woodworking Industries) co-operated with the Kemijoki Floating Association in a study of the floating loss of 2 metre partially barked spruce and pine pulpwood in the Kemijoki in Northern Finland.

The test material consisted of 42,760 spruce pulpwood logs (6 groups) and 58 894 pine pulpwood logs (8 groups), i.e. about 0.7% of the total of pulpwood floated. The logs were spray-painted at both ends and marked with group numbers.

They were launched between May 7 and June 4, and sorting was over at the turn of August. The floating time weighted by the number of logs in the series arriving from the lower part of the floatway varied from 26 to 51 days and that of the series arriving from the upper parts from 78 to 81 days. Weather conditions were relatively favourable in the spring of 1954. The timber was stored in stacks, mostly on the banks of rivers or brooks, a part on a frozen lake.

The floating loss in terms of the number of logs averaged 3.75% for spruce and 3.15% for pine. No essential differences could be registered between different barking times although they varied from the spring of 1952 to April 1954. The spruces lost were so much smaller that the floating loss of each tree species was very similar, as is shown by the following overall results obtained in 1953—54 from co-operating sorting.

Floating loss per cu.m., %	1953	1954
Spruce	3.39	4.69
Pine	3.24	4.96

An examination of the factors affecting the magnitude of sinking indicated that sinking was an important factor only for pulpwood barked in September — October of the preceding year or later. For pulpwood barked previously the floating loss is probably attributable to drifting ashore, dynamiting and theft. Another indication supporting this view is the above-normal size of the dry pulpwood lost.

The floating loss arrived at on the basis of the test material corresponds to the floating loss registered in co-operative sorting. Hence measuring errors had no great effect.

That it is not solely sinking that causes the disappearance of pulpwood is also clear from the fact that 0.5% of the number of logs launched arrived at the sorting place in the second floating year.

However, exceptionally unfavourable seasoning factors may increase the floating loss considerably. To mention an example: a spruce pulpwood lot barked in November 1953 and launched into water on May 7 showed a loss of 13.5% of the number of logs, principally through sinking. — *Paper and Timber (Finland) No. 11, 1954.*

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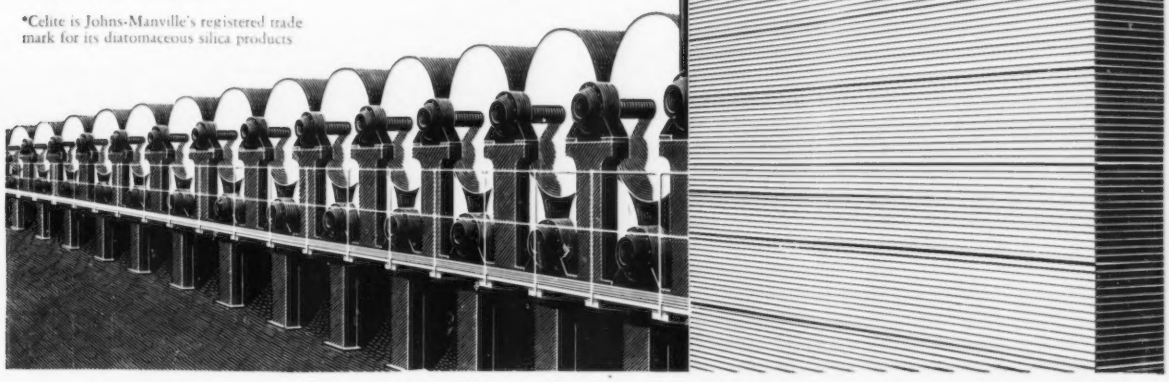

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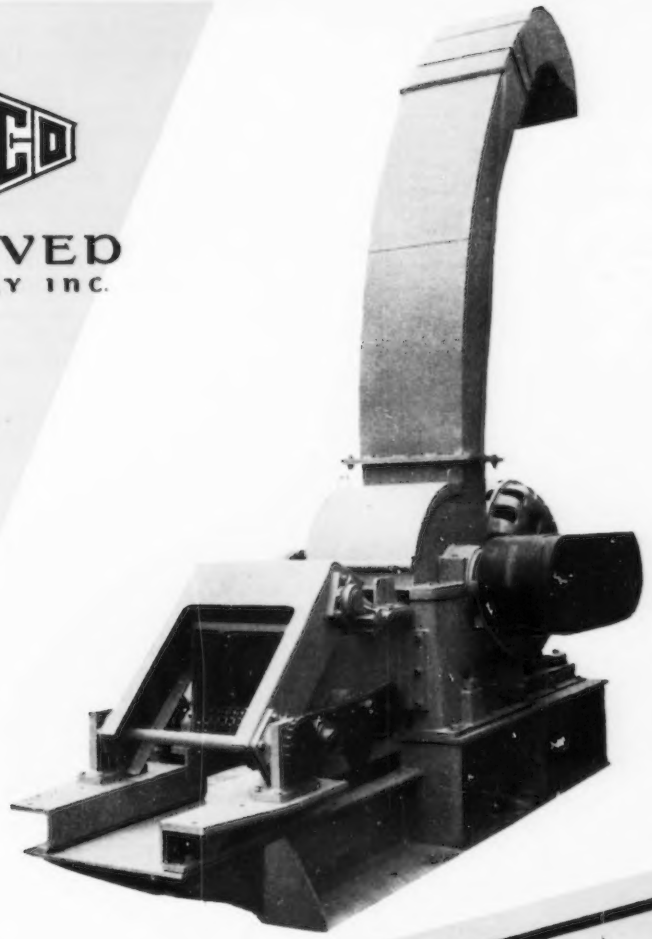

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Injury Free Winder Operation

Julius A. Draper

Dir. of Safety, Consolidated Paper Corp., Ltd., Montreal, Que., Canada

Suppose someone said to you: "There has been an accident at the lake." What do you immediately think of? You think of a drowning because by long odds, the water presents the major hazard.

A parallel can be drawn with the re-winder. The hearing of a serious accident at this machine instantly brings to mind a picture of a victim of a nip point accident between the winding roll of paper and the front drum on which the paper rides.

Unwinder stands, slitters, core shafts, and other relatively minor dangers presented by winders probably, indeed without doubt, figure in more accidents than does the nip point. But the injuries suffered at these places are, with rare exceptions, comparatively minor, even if fingers are cut off and toes crushed. It is the nip point in front of the winder that causes crushed hands and arms, removes arms at the elbow or shoulder, fractures skulls, breaks necks and too often brings death.

This may seem to be an unwarranted, grim picture to many but my experience has been with large high speed production of newsprint and kraft paper, and for that part of our industry at least the re-winder has proved itself to be an extremely hazardous piece of equipment, and the nip point is responsible for at least 90 per cent of the disabilities and costs in re-winder accidents and for about 100 per cent of the fatal cases.

For that reason, and because of a necessarily limited time available for discussion of any individual part of the paper machine, I propose to ignore the minor hazards and concentrate on the nip point.

I have a list of some winder accidents that occurred in our company before nip point guards were installed.

I will show that the installing of a guard for the nip point does not necessarily eliminate accidents at that place unless the guard is adequate.

I also have a list of winder accidents —that is nip point accidents—that have occurred in the Province of Quebec in the last two and a half years. This list was kindly compiled for me by A. S. Cook, manager of the Quebec Pulp and Paper Safety Association. The list is impressive and includes three fatal cases. Time does not permit me to review all these accidents.

I am going to quote briefly from an article I wrote and that appeared in the *National Safety News*, for January this year.

"It was not many years ago—1942 to be exact—that the *National Safety Council* statistics showed that the nip point on paper machine re-winders was the cause of more accidents than occurred on any other machine in our industry.

"Since that time it has been general practice to provide a guard in front of the nip between the drum and the winding roll of paper. These guards have reduced the incidence of such accidents in great measure. But nip point winder accidents have not been eliminated. In 1951 we had a young man lose an arm above the elbow on a winder equipped with what we had considered to be a good guard.

In 1946 we had a fatal accident on a Cameron winder, also guarded, and in both cases, the guard was in operating position.

In 1952, there were two fatal nip point winder accidents in the Province of Quebec, and in 1953, an arm was lost at the shoulder in a large paper mill also in Quebec and at a winder nip.

"These experiences have convinced us that such accidents will occur so long as it is possible for a hand to reach the in-running nip."

"There may be an interval of many years in an individual mill between accidents of this nature, some mills may seem to have escaped altogether, but as long as the possibility exists we are relying on the human factor and our luck."

Two of the fatal cases that I know of in our company occurred to men who were not at the time working on the winders. These men slipped while passing in front of the winders and in trying to prevent their fall got a hand caught in the rolls. Another fatal case in our company occurred when an inadequate guard was in operating position on a Cameron winder and we lost an arm in 1952 on a winder that we thought was well guarded. Those two cases were mentioned before in this paper. I remind you of them in order to emphasize the necessity of an *adequate* guard—a guard that positively makes it impossible for the hand to reach the nip point and preferably one that opens the circuit to the driving motor when it is not in the operating position.

I do not propose to go into the many different types and designs of guards for the winder nip point.

Our Port Alfred design is fully covered in the January 1954, *National Safety News*.

The Brown Company at Berlin, New Hampshire, have a most interesting modification of our Port Alfred guard.

The Canadian International Paper have a good guard installed on large Cameron Winders.

The Mead Corporation at Chillicothe, Ohio, has a good design.

Some years ago one of the big insurance companies—Factory Mutual or Employees Mutual—put up a fine booklet with good drawings on *Guarding Paper Machine Nip Points*, the cost I believe was 35 cents. If you can put your finger in this item—it is worth having.

There are I believe several N.S.C. data sheets on winder guards. The difficulty of having good adequate guards installed on your machines and my machines is not mechanical or electrical—it is psychological.

Where a mill has never had a winder accident or where the last such accident was many years ago the difficulty is to sell the idea to the superintendent and manager, not to mention the machine crews and engineers. It is far more of a sales job than a mechanical job.

If the job is not done our third, fourth and fifth hands are going to suffer as they have been doing regularly here and there all over the world since our industry learned how to make paper in rolls instead of sheets.

I would far rather have a good, well trained, group of men in a mill with no guards than have a poor group of workers in a perfectly guarded mill. My approach through engineering on this nip point on winders does not mean that we can neglect training of our men.

My point is that the best of men can and do make mistakes. The nip point hazard can be engineered out of existence. Nip point accidents are so terrible and costly that they should be engineered out of the realms of possibility.

I do not pretend to have fully covered the prevention of rewinder accidents, but I hope a small dent has been made on by far the most important hazard on that machine.

Paper presented at 1954 National Safety Congress.

Bleaching Neutral Sulphite Semi-chemical Pulp

Gerald Haywood

Research Director, West Virginia Pulp & Paper Co., Luke, Md.

Unbleached Pulp Quality

In order to produce economically a high quality bleached NSSC (Neutral Sulphite Semi-Chemical) pulp, the unbleached pulp should meet these specifications: *a)* maximum yield at minimum bleachability; *b)* be uniformly defibered, i.e., contain a minimum of fiber bundles and of cut fibers; *c)* be as free as possible. Process conditions that contribute most to these specifications are *a)* small, uniform chips, $^3/_8$"-$^5/_8$" in length of cut; *b)* uniform penetration of cooking liquor into chips; *c)* high temperature and high consistency of stock during defiberizing step. Oversize chips are the primary cause of dark centers. Dark centers can approximate raw wood in firmness and lignin content and therefore require more power to defiberize, with the resultant formation of fiber clumps. These fiber clumps have a much higher chlorine demand than the fibers from the well cooked surface of the chips. All this adds up to a non-uniform pulp that is slow and difficult to wash, and this type of stock tends to become progressively slower as it moves through the bleaching sequence.

Measure of Bleachability

The chlorine demand of unbleached NSSC pulp is determined by a modified $KMnO_4$ test, using 200 cc. N/10 $KMnO_4$ as outlined in TAPPI method RC242.

There is a relation between the RC242 number and the chlorine needed in the chlorination stage that will yield a pulp after caustic extraction with a conventional $KMnO_4$ number of 4.0. There is also a fair relation between lignin content and the RC242 number as indicated in Table I.

Unbleached NSSC pulps can be bleached by either a single stage of hypochlorite or peroxide, or by a multi-stage sequence of chlorination, caustic extraction and hypochlorite.

Single Stage Hypochlorite

Unbleached pulps from Canadian poplar and birch wood were bleached with a single stage of hypochlorite with the results shown in Table II.

TABLE I

RC242 No.	% Cl_2 on O.D. Pulp to be applied in chlorination stage	% Lignin
51	7.6	5.36
53.5	8.2	5.67
58	9.3	6.31
61	10.0	6.44
68	11.7	7.05
70	12.3	7.30
79	14.8	7.83
83.5	15.5	8.23
86.5	16.3	8.53
88	16.7	8.77
91.5	17.8	9.39
94	17.8	9.65
98	19.1	10.09

These data show that only a portion of the lignin is removed by the hypochlorite, and that the brightness development is not good. Due to the lignin in the bleached pulp, there is a tendency for the pulp to revert in color on standing. Sodium silicate has been suggested as a buffer when bleaching NSSC pulps by a single hypochlorite stage. Single stage bleaching has a cost of advantage over multi-stage bleaching because the cost of bleaching chemicals is less and the loss of yield due to bleaching is under 5 percent, but multi-stage bleaching yields a brighter, stronger and more versatile pulp.

TABLE III

Strength of NSSC Birch Pulp

	Unbleached	Bleached Single Stage Hypochlorite
Williams freeness	75	75
Tear	63	66
Burst	44	46
Fold	150	200
Tensile	78	74
Bulk	1.43	1.35
Gurley porosity	78	340
Str. No.	18.2	19.4

There is a slight increase in strength over the unbleached strength due to bleaching with a single stage of hypochlorite.

Peroxide Bleaching

Unbleached NSSC pulp can be increased up to 10 points in brightness by bleaching with 2 percent Na_2O_2 in a single stage. The cost of the peroxide and the stabilizing chemicals make this procedure of little utility except in special cases.

Multi-Stage Bleaching

Unbleached NSSC pulp can be bleached to 85 percent brightness by a three-stage sequence as outlined below.

Stage	Name	Active Chemical	Consistency %	pH	Temperature °C.	Time minutes
1	Chlorination	Cl_2	1.5 to 3.5	1.5-2.0	25	30- 60
2	Caustic extraction	NaOH	13 to 14	10-11	60	60- 80
3	Hypochlorite	$Ca(OCl)_2$	3 to 14	8-9	32	60-180

TABLE II

Pulp	Unbleached Canadian Poplar 1	2	Unbleached Birch
Consistency, %	10.4	10.4	12.5
Temperature, °C.	32	32	32
Time, hrs.	3	3	3
Cl_2 as $Ca(OCl)_2$, %	9	10	10
CaO, as buffer, %	.72	1.96	2
Brightness	52	60	62.6
Lignin, in unblea. pulp, %	8.3	8.3	...
Lignin, in blea. pulp, %	4.3	4.5	...

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Chlorination

The optimum temperature for the chlorination stage is 20-30°C., but in order to have uniform bleaching conditions the year around, it is best to standardize on the summer temperature of the water available to the bleaching sequence. The consistency in the chlorination stage depends on whether liquid chlorine or chlorine water is used. The reaction between elemental chlorine in water solution and lignin in the pulp is extremely rapid and the reaction is complete in 30-40 minutes.

Caustic Extraction

The purpose of caustic extraction is to solubilize the chlorinated lignin. The solubility of the lignin in the chlorinated pulp is a function of how thoroughly it has been chlorinated. One of the problems in caustic extraction is the difficulty of washing hydrochloric acid out of the chlorinated pulp. When free acid is left in the pulp entering the caustic extraction stage, an abnormal amount of caustic soda is needed to neutralize the free acid in the pulp. The optimum conditions are: *a)* pH 10-11; *b)* temperature 60-70°C.; *c)* consistency, 13-14 percent. When chlorination has been thorough it is possible to obtain pulp with a $KMnO_4$ number of 4.0 and a hypochlorite chlorine demand of 2.0 percent in the pulp leaving the caustic extraction stage.

Hypochlorite Stage

The hypochlorite stage can and is carried out at either low or high consistency. It is our experience that a high consistency stage will produce a cleaner pulp of a little less strength than a low consistency stage. At either low or high consistency, it is extremely important to buffer with NaOH to a pH of 9-10 so as to avoid degradation of the pulp in strength and viscosity.

In *Tables IVa and IVb* there are data as to chlorine and NaOH consumption based on unbleached pulp; and yield and brightness of bleached pulp produced from four hardwood NSSC pulps by a three-stage bleaching sequence.

In *Tables Va, Vb and Vc* there are listed bleaching conditions for a three-stage sequence operated at either low or high consistency and the resulting chemical and strength properties of the two pulps.

In *Table VI* there are listed data which show the comparative chlorine consumption, yield and strength values of bleached NSSC and kraft pulps from the same woods.

TABLE IVa

	Unbleached Pulp			First Stage	Second Stage		Third Stage	Bleached Pulp	
Wood Used	O.D. Yield	% Lignin	Brightness	% Cl_2 on Pulp	% NaOH	K No.	% Cl_2 as Hypo	O.D. Yield	Brightness
Gum	65.1	10.0	30	14.0	4.0	4.6	1.9	53.1	81.1
C. Oak	63.2	7.3	28	12.3	4.0	3.6	1.8	54.7	84.8
Hickory	65.5	8.7	43	14.5	4.0	2.7	1.4	54.8	86.5
H. Maple	68.2	7.6	48	13.9	4.0	2.3	1.5	57.3	88.8

TABLE IVb

Sertngth of Bleached Pulps at 75 seconds Williams freeness

Wood	Minutes to beat	Tear	Burst	Fold	Tensile	Bulk	Str. No.
Gum	6.5	93	58	310	80	1.33	23.8
C. Oak	9.0	88	43	190	66	1.46	19.1
Hickory	11.0	106	66	380	84	1.46	26.2
H. Maple	9.5	64	58	290	79	1.27	20.9

TABLE Va

Comparison of High and Low Consistency Bleaching of NSSC Unbleached Pulp from C. Poplar

Stages	Low Consistency	High Consistency
1. Chlorination		
Consistency	2.5	2.5
Temperature	room	room
Chlorine, % on pulp	11.0	11.0
Time to consume	5 minutes	5 minutes
2. Alkali Extraction		
Consistency	2.5	10%
Temperature, °C.	48-52	46-52
NaOH on pulp	4%	2%
pH	11.1-11.6	7.7-8.2
Time	1 hour	1 hour
3. Hypochlorite		
Consistency	2.5	10%
Temperature, °C.	34-38	38
Chlorine (lime bleach)	1.8	1.8
Time	5 hours	5 hours
Chlorine consumed	1.40	1.64
pH	9.2-10.4	8.4-11.5

TABLE Vb

Chemical Values

	Low Consistency			High Consistency	
	Unbleached	After Chlorination and Caustic Extraction	After Hypo	After Chlorination and Caustic Extraction	After Hypo
Brightness	46.1	56.6	74.8	59.2	86.0
K No.	...	7.3	...	3.2	...
Pentosans	21.8	...	22.3	...	21.5
Soluble in 3% NaOH at 100°C.	11.7	...	14.1	...	16.0
Alpha cellulose	...	...	76.9	...	76.4
Williams freeness	34	152	90	96	71
% Yield—unblea. Pulp Basis	...	...	86.3	...	83.4

TABLE Vc

Strength Values

	Unbleached	Bleached Low Density		Bleached High Density	
Beating time	0	10	0	10	0	10
Williams freeness	34	80	90	179	71	149
Tear	76	67	75	66	72	61
Burst	35	51	63	75	61	69
Fold	40	100	450	1390	330	1350
Bulk	1.40	1.28	1.21	1.11	1.20	1.11
Gurley porosity, sec.	15	244	246	1800	100	1390
Str. No.	16.2	19.0	23.2	24.7	22.3	23.6

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MILL OFFICIALS

An alphabetical list of the names of offices and operating executives of the mills including their connections.

Reports of the Paper and Pulp Mills in Latin America and Philippine Islands.

LIST OF NEW MILLS IN THE UNITED STATES AND CANADA

CLASSIFIED SECTION

In this section is shown in alphabetical order the products made by all of the paper and pulp mills in the United States and Canada.

CITY ADDRESSES

In this section is shown the names and street addresses of Pulp and Paper mills and mill agents maintaining offices in the principal cities of the United States and Canada.

PAPER, PULP MILL AND CONVERTERS EQUIPMENT AND SUPPLIES

A classified section showing machinery, equipment and supplies purchased by the paper and pulp mills and the converters of paper products, with names and addresses of the manufacturers.

An alphabetical list of Registered Trade Marks with names of owners.

CONVERTERS

Manufacturers of products made from paper, card board, moulded pulp, etc. This section is geographically arranged by States and reported as follows: Name of company. Location of plant. Name of officers and operating executives. Types of mill equipment. Kind of products made.

CONVERTERS' PRODUCTS

Alphabetically classified including the names and addresses of concerns manufacturing products made from paper, card board, moulded pulp, etc., such as bags, boxes, cups, envelopes, glazed and coated paper and board specialties, papeteries, prepared roofing, tablets, pads, tags, toilet paper, towels, vegetable parchment, wall paper, waxed paper, etc., etc.

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A selected list of dealers in rags, paper stock, etc. Keyed to show stocks handled. Importers are indicated.

RAGS AND PAPER STOCK CONSUMED

Kind of grade of Rags and Paper Stock Consumed by the mills in the United States and Canada.

PULP TESTERS

Approved by certified pulp testor's bureau

STATISTICAL TABLE

Showing number of concerns owning mills, together with the number of paper and pulp mills in the United States and Canada.

TRADE ASSOCIATIONS

In the paper and allied trades of the United States and Canada.

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TABLE VI

Comparison of Strength of Bleached Pulp
from the Same Woods by the NSSC and Kraft Processes

Wood	Process	% Cl_2 Applied	Brightness	O.D. Yield per cord	Time to Beat	Strength Values at 75 seconds Williams: Tear	Burst	Fold	Tensile	Bulk	S.N.
Gum	Kraft	4.34	78	1192	22.5	109	47	130	61	1.47	22.1
	NSSC	16.0	81	1295	6.5	93	58	310	80	1.33	23.8
C. Oak	Kraft	3.27	80	1623	28.0	91	32	30	51	1.49	16.3
	NSSC	14.3	85	1863	9.0	88	43	100	66	1.46	19.6
Hickory	Kraft	3.71	81	1797	30.0	116	46	130	68	1.52	22.4
	NSSC	16.5	86	2060	11.0	106	66	380	84	1.46	26.2
H. Maple	Kraft	3.02	84	1623	33.5	68	35	30	54	1.40	15.2
	NSSC	15.9	89	1845	9.5	64	58	290	79	1.27	20.9

Summary

In this paper I have stressed the relation of chipping, cooking, defiberizing and the effect of consistency in the bleaching sequence on the quality of bleached NSSC hardwood pulp.

Bleached NSSC pulp has properties which make it an excellent substitute for spruce sulphite pulp in quality as well as in cost. The pulp as delivered to the paper mill has a Williams freeness of approximately 50 seconds and therefore requires little additional refining. The pulp can be used as a 100 percent component of the furnish, but usually it is blended with sulphite or kraft pulp in the production of the hard types of paper such as bond, tablet, envelope, poster and offset. It is too transparent and dense for use in either uncoated or coated publication paper, except when groundwood is a large component of the furnish. It can be used as a 100 percent component of the furnish in producing greaseproof and glassine grades of paper.

In regard to the economics of the manufacture of NSSC hardwood pulp, it is best to have the plant associated with a kraft mill so that the chemical in the waste liquor can be used as make-up chemical for the kraft mill. Although NSSC pulp can be bleached to 85-90 percent brightness in a three-stage sequence, the consumption of chlorine and caustic soda and the loss of yield during bleaching are very high so that in comparison to kraft hardwood pulp it is more costly, even with the greater yield of fiber per cord of wood.

Presented at the Third Annual Pulp and Paper Conference sponsored by Pulp and Paper Laboratory, Chemical Engineering Department, Engineering and Experiment Station, College of Engineering, University of Florida, Gainesville, Florida, on December 6-7, 1954.

NEW LITERATURE

Alovco 20 Corrosion Resistant Valves. (Bulletin 8) Incorporates recent field-test data on Aloyco 20 in various concentrations of sulfuric acid at different temperatures. Includes description, and applications, together with engineering specifications and cross-sectional illustrations of 39 valves and fittings. Alloy Steel Products Co., Inc., West Elizabeth Avenue, Linden, N. J.

B & W Stainless Mechanical Tubing. (Bulletin TB 365) Defines many finishes, size ranges, types and shapes available to industry. Also contains table of condensed properties and processing data for nine popular grades of stainless tubular products. Tubular Products Div., Babcock & Wilcox Co., Beaver Falls, Pa.

Bailey Open Channel Meters. (Bulletin M22-5) Discusses measurement of flow of liquids with suspended solids for water supply and waste treatment applications in the pulp and paper industry. Also gives engineering data on flumes and weirs. Bailey Meter Co., 1050 Ivanhoe Road, Cleveland 10, Ohio.

Chart to Determine Savings and Size of Continuous Blowdown System. Contains instructions for use of chart to calculate savings possible through heat recovery when a properly sized Automatic Continuous Blowdown System has been developed. R. H. Baum, Sales Mgr., Henszey Co., Watertown, Wis.

Design and Development of Seal-Less Pumps. (Technical Paper) Reprinted from Chemical Engineering Progress this details the design and development of centrifugal pumps that have no seals or stuffing boxes. Also discusses new developments in the canned rotor pump field and gives a series of operational case histories. Chempump Corp., Station B, 1300 East Mermaid Lane, Philadelphia 18, Pa.

Denver Samplers. (Bulletin SI-B4) Includes specifications, charts, detailed data and photographs of samplers designed for applications where dust is a problem, headroom is limited, where mixing of sample is required between sample cuts, or where samples are required from points in the concentration circuit. Also provides a flowsheet sketch suggesting key locations for wet or dry samplers throughout the circuit. Denver Equipment Co., P. O. Box 5268, Denver 17, Colo.

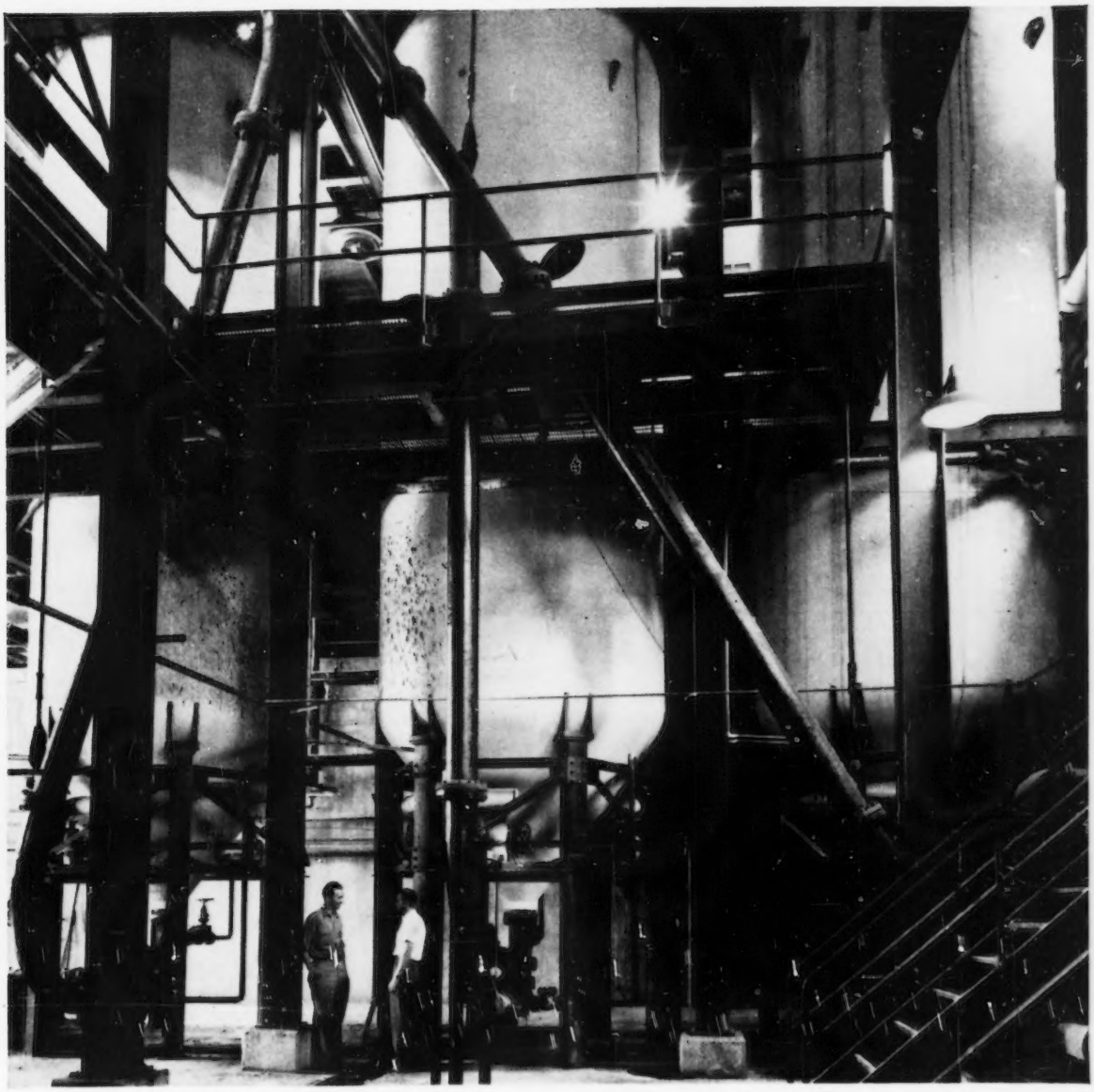
How to Select an Overhead Crane. (Technical Bulletin 79) Provides basic data on classes of crane service, ratings and capacities and recommended speeds for bridge, trolley and hoist, along with standard dimensions and clearances. Whiting Corp., 15623 Lathrop Avenue, Harvey, Ill.

Harding Water, Sewage, and Trade-Waste Treating Equipment. (Bulletin 35-D) Shows details of construction and specifications for their circular clarifiers, up to 200 feet diameter, and rectangular clarifiers with crane type scraping mechanism. Also briefly describes digesters and automatic backwash sand filters. Discusses municipal and industrial water treatment and industrial liquid waste treatment, connected with pulp and paper plants, etc. Hardinge Co., Inc., 240 Arch street, York, Pa.

Lubricating Oil Analysis. (Lubrication Magazine Vol XLI) Available free from Texas Co. 135 E. 42nd street, New York 17, N. Y.

Mechano-Chemical Process. (Booklet) Gives short history of experimental laboratory work by Dr. E. C. Lathrop and Dr. S. I. Aronvsky of the U. S. Dept. of Agriculture, leading to final engineering design of this process, and a detailed summary of its unique advantages, together with three simplified flow charts. Also includes report of worldwide marketing picture, patent situation, and samples of seven different papers, illustrating products of blended pulps, using bagasse, wheat straw, and wood pulps. Parsons & Whittemore-Lyddon Organization, 250 Park Avenue, New York 17, or 35 New Bridge street, London EC4, England.

Old, But Still Producing (Booklet D477) Pictorial story of Caterpillar's "no parts orphans" policy. Also contains photographs and testimonials from owners of tractors, motor-graders, electric sets, and engines over 15 years old still doing an economical days work. Caterpillar Tractor Co., 600 West Washington street, Peoria, Ill.



88-year-old D. M. Bare Company installs 3 Blaw-Knox Digesters as part of its "long-range" plans

From pulp to paper mill, the D. M. Bare Company is undergoing the largest construction and modernization program in its 88-year history.

Workhorses of the recently completed pulping operation are three 2250 cubic feet capacity Blaw-Knox Stationary Digesters.

Blaw-Knox engineers worked closely with those of the D. M. Bare Company designing and fabricating these digesters to have maximum operating flexibility, safety and resistance to corrosion. They are fabricated for 150 pound design pressure. Provision has been made for either direct or indirect cooking.

During fabrication, each of these digesters was inspected twice at each stage of its completion. This standard Blaw-Knox procedure assured the D. M. Bare Company of maximum operating safety from digesters that would be insured by any company. This is but one of many factors that make Blaw-Knox Digesters more reliable. When you buy, be sure to specify Blaw-Knox.

BLAW-KNOX

BLAW-KNOX COMPANY *Blaw-Knox Equipment Division*
Process Equipment Department/Pittsburgh 38, Pennsylvania

NEWS OF ASSOCIATIONS

Joint Kalamazoo TAPPI and Supts Meeting

The next meeting of the Kalamazoo Valley section of TAPPI will be a joint meeting with the Michigan Division of A. P. P. M. S. A. This will be the twentieth annual "Papermakers Get Together" and will be held at the Hotel Harris, Kalamazoo, Mich., January 13, starting with dinner at 6:30 p.m.

Speaker of the evening will be D. C. Everest, Chairman of the Board, Marathon Corp., recipient in 1944 of a TAPPI gold medal, founding trustee and present trustee of the Institute of Paper Chemistry. Mr. Everest will give "A Review and Preview of the Paper Industry."

This occasion will afford an opportunity for local papermakers and students to thank Mr. Everest for a very valuable contribution of books from his personal library to the Paper Library of Western Michigan College, Kalamazoo.

James A. Wise, President and General Manager, Kalamazoo Paper Co., will act as toastmaster.

Superintendents Local Meeting Dates

DATE	DIVISION	PLACE
Jan. 13	Michigan	Hotel Harris Kalamazoo, Mich.
Jan. 21	Connecticut Valley	Roger Smith Hotel Holyoke, Mass.
Jan. 27	Miami Valley	Middletown, Ohio
May 20-21	Penna., New Jersey Delaware	Hotel Lawrence Erie, Pa.

TAPPI Local Meeting Dates

DATE	SECTION	PLACE
Jan. 7	Central District Empire State	University Club 431 E. Fayette St. Syracuse, N. Y.
Jan. 11	Pacific	Longview, Wash.
Jan. 11	Lake States	Conway Hotel Appleton, Wis.
Jan. 11	Ohio	Manchester Hotel Middletown, Ohio
Jan. 11	Metropolitan District— Empire State	Fraunces Tavern Pearl and Broad Sts. New York, N. Y.
Jan. 13	Kalamazoo Valley	Hotel Harris Kalamazoo, Mich.
Jan. 13	Northern District Empire State	Woodruff Hotel Watertown, N. Y.
Jan. 14-15	Southeastern	Francis Marion Hotel Charleston, S. C.
Jan. 17	Chicago	Chicago Bar Assn. Chicago, Ill.
Jan. 20	Eastern District Empire State	Glens Falls, N. Y.
Jan. 27	Delaware Valley	Engineers Club 1317 Spruce St. Philadelphia, Pa.
Feb. 2	Western District Empire State	Buffalo, N. Y.
March 25	New England	Hotel Statler Hartford, Conn.

National Meetings are shown under "Remember These Dates" on page 5.

To Hold Welding Show In Kansas City

The American Welding Society will produce its third annual Welding Show at the Municipal Auditorium, Kansas City, Mo., June 8 to 10, inclusive. The show will be the first national heavy industry exposition ever to be staged in Kansas City.

Concurrently with the show, from June 7 to 10, the society will conduct its annual spring Technical Meeting in the same city.

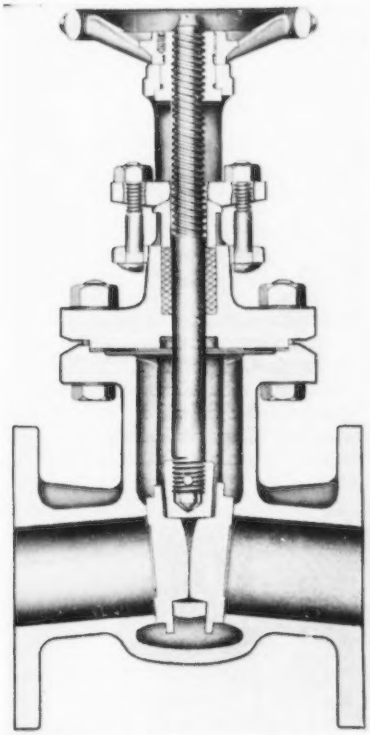
Salesmen Elect Officers

At the regular monthly meeting of the Salesmen' Association of Paper & Allied Industries, Inc., on December 6, at the Belmont Plaza Hotel, New York, the following officers were elected for the year of 1955. John Meehan, Stevens & Thompson Paper Co., re-elected President; Al Rutter, American Lace Paper Co., Vice-President; Max Grindlinger, Standard Bab Sales, re-elected Treasurer, and Clarence Jacobsen, Sanitary Products Corp., Secretary.

The following were elected to the Board of Governors: John Gumina, Resolute Paper Products Corp., Andrew Duitz, Miro Paper Products Co.; David Lapin, Scheck Bros.; David T. Schlanger, West Shore Twine & Paper Supply Corp.; Irving Robinson, Empire Brushes, Inc., and Irving Frosch, Stevens & Thompson Paper Co.

A tribute was paid at this meeting to Ed Landers, of Park Tissue Mills, who is retiring from active work on January 1, 1955. Honorary Life Membership in the organization was voted for Ed Landers, who was one of the charter members of the Association. As a gesture of their appreciation for his past services, the Association presented him with a sterling silver cigarette case, inscribed with his life membership.

NEW EQUIPMENT AND SUPPLIES



New Line of Corrosion Resistant Valves

A completely new line of alloy gate, globe, and angle valves has been announced by Crane Co., 836 S. Michigan Ave., Chicago 5, Ill. Outstanding features of the new line are a unique and exclusive split-wedge disc design in the gate valves and an improved disc-stem connection in the globe and angle valves. Materials in which the new valves are regularly available are Crane 18-8S Mo stainless steel and Cranelov 20 high-nickel, high-chromium stainless steel. Both alloys are cast in the manufacturer's foundries. Teflon packing is used in all the valves.

The split-wedge disc in the gate valves is made up of two identical, circular discs placed back-to-back in a carrier. The discs have a convex trunnion on the back and an integral circumferential flange which bears on guide slots in the valve body. Since the seating load is uniformly distributed over both discs, excessive force is not required for tight seating and there is no danger of buckling of the discs. This uniform pressure, plus freedom of the discs to rotate, is said to be effective in reducing seat wear and preventing galling of seating surfaces.

In the new globe and angle valve disc-stem construction, the stem extends much farther into the disc, with a minimum amount of radial clearance. Chattering of the disc is eliminated and seat wear is greatly reduced, according to report.

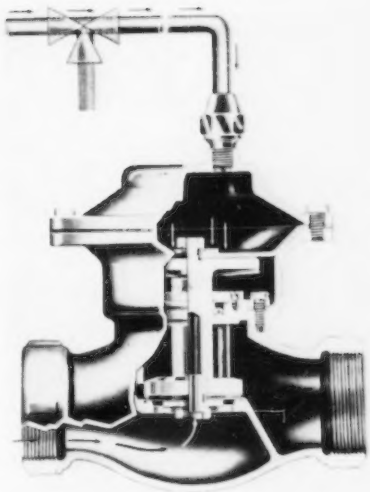
All the valves are furnished regularly with all bolting of stainless steel. They are available in screwed ends, sizes ½ to 2-inch inclusive, and in flanged ends, sizes ½ to 6-inch inclusive.

Wind Vane to Aid in Air Pollution Control

Bendix Aviation Corp., 1400 Taylor Ave., Baltimore 4, Md., is offering the Bendix-Friez Windtrol as a wind operated device to regulate industrial air pollution.

A vane-equipped propeller is mounted on a swivel support so the propeller will be kept in position facing the wind as the latter's direction changes. The propeller drives a magnet that turns a calibrated spring restrained cup equipped with a commutator and brush to measure angular displacement equivalent to selected wind speed. A similar commutator is used to measure wind direction. The two signals are fed to a relay control housing to actuate correction equipment, when the wind velocity and direction threaten to create bad conditions.

Odorous stack effluents can be treated with counter odorants. Forced draft equipment can be turned on to increase effective stack height to prevent complaints due to the release of fly ash. Scrubbing equipment can be turned on and off so it operates only when the wind is from an objectionable direction. The equipment is available also for recording on a strip chart to keep a check on past performance.



Brass Valve Operates On 3 to 1 Ratio

Telsco Fittings Division, 5422 Redfield St., Dallas, Texas, announces a new nonferrous, pressure-operated Hydra-Matic Valve for handling air, gases, water, oil and other liquids. The brass valve, of diaphragm construction, is designed to operate on a three-to-one ratio. It can be remotely controlled by means of line pressure through by-pass tube, pressure from separate source through a three-way pilot valve, or by line pressure through a hole in the plunger of the valve.

Pilot valves can be hand-operated, or of the solenoid type connected to a time clock or other signalling device.

The valve is manufactured in five sizes, one inch through three inches, and furnished with threaded pipe connection in all sizes through two inches, flanged connection for all larger sizes.

Bulletin No. 300, showing several specific applications for the valve, is available on request from the manufacturer.

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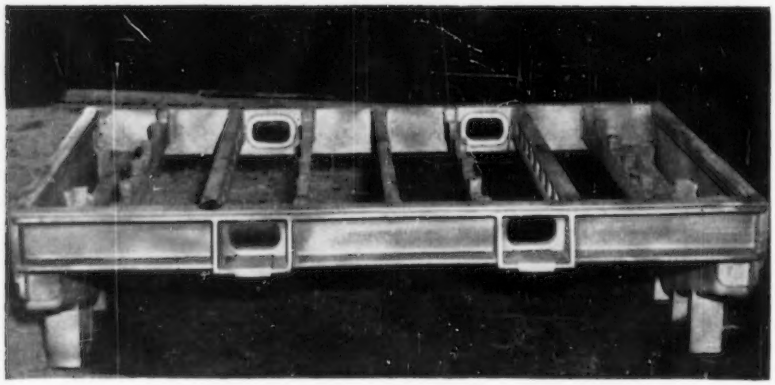
TELEPHONES: WHIPPANY 8-0880 8-0881 8-1057



Cast Weldment Used on Ahlfors Screen Frames

Electric Steel Foundry Co., 2141 N.W. 25th St., Portland 10, Ore., is using the cast weldment process in the production of screen frames for the Ahlfors Upflow Vibratory Pulp Screen. Originally of bolted construction requiring expensive machine work and fastenings, the frames are now of welded construction and are said to offer a well designed, integral casting of greater durability and economy.

It is explained that during the upward screening motion of the Ahlfors, the heavy load of wet pulp, pulsated by the diaphragm, exerts an intense dynamic load on the frame. The frame is composed of Alloy 40 end castings and side rails; the side rails are held together by seven extra heavy Alloy 40 cross bars which serve as supports for the screen plates. The firm's Alloy 40 is a chromium-nickel stainless steel (ACI-CF8), recommended for the use for which this screen frame is designed. The frame is bolted to the flat top of a vibration dampener at the machined base of the end castings.

The cast weldments are heat treated and straightened before welding into the assembly. A jig is employed to insure proper positioning of the cast weldments. A stress relieving heat treatment, following by a careful dimensional check, is said to insure that the unit is ready for final machining to the close tolerances required.

Constant Flow Valve

A new series of contant flow valves is designed to maintain the rate of flow of non-abrasive fluids within one percent up to 200, 300, 400, 500, 600, or 700 g.p.h. as desired. Each model will maintain flow rates as low as 10 per cent of maximum. The valves will regulate the flow of fluids with viscosities as high as 250 s.s.u. at operating temperature, static pressures as great as 500 p.s.i., and temperatures as high as 250 degrees F., despite fluctuations in upstream or downstream pressure. Flow level is accurately maintained as long as the fluid viscosity and temperature are constant and the pressure differential across the valve is 40 p.s.i. or higher for maximum flow. The valves are made by Askania Regulator Co., 240 E. Ontario St., Chicago 11, Ill.

Flow level may be set manually at the valve or through any one of four optional remote adjusting systems specifically designed to operate in conjunction with the valve. These four systems, one hydraulic, one pneumatic, and two electric, may in turn be operated manually or by a pneumatic, or electric signal proportional to temperature, flow of another fluid or a gas, or some other variable. In addition, any one of these adjusting systems may incorporate a feedback potentiometer to develop a voltage proportional to flow through the valve.

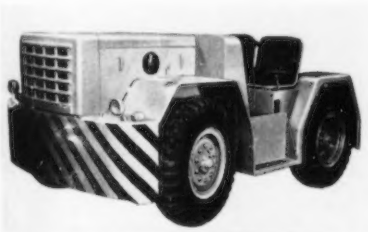
Some potential applications include manual regulation of flow, automatic regulation of flow according to some variable such as temperature, proportioning of several flows, and, when the basic system is complemented by other devices, summarization of several fuel flows to control the quantity of air delivered to the point of combustion.

The constant flow valve operates by measuring the pressure drop across an adjustable orifice. This pressure differential is applied across a spring-biased hydraulic cylinder connected to operate a throttling valve upstream from the orifice. If the pressure drop across the orifice does not exactly balance the constant force applied by the spring, the resultant piston action causes the throttling valve to re-adjust differential pressure at the orifice to the desired valve, and, consequently, flow to the preset rate.

Break-Resistant Blade For Cutting Concrete

Polk-A-Dot is trade name of new abrasive blade for masonry cutting. It is described as triple-reinforced, break-resistant and featuring thousands of polk-a-dot bumps on both sides of the blade. The dots are abrasive, and each acts as an extra cutting edge. The manufacturer is Clipper Mfg. Co., Dept 672, 2800 Warwick St., Kansas City 8, Mo.

The new blades will be introduced in February. They are said to be cooler, smoother running, faster cutting, and longer lived.



Four-Wheel-Drive Tractor

Frank G. Hough Co., 747 Seventh St., Libertyville, Ill., has introduced a new 4-wheel drive towing tractor. This new tractor, the model TU-80 Payloader, is a low, compact unit powered by either gasoline or diesel engine with a drawbar pull of 8,000 pounds on dry cement.

It is described as a versatile and maneuverable tractor for many applications in industrial plants. The 4-wheel-drive on 11.00 x 20 pneumatic tires makes it efficient for both indoor and outdoor work. The overall height is 61 inches and the width 80 inches. The maximum outside turning radius is 238 inches.

It has 4-wheel hydraulic brakes. The combination of torque-converter-drive and 4-speed full-reversing transmission supplies the fullest range of speed selection and control for all conditions encountered in pulling or pushing from either end. Top speed forward is 22 m.p.h. and reverse speeds range from 0 to 33 m.p.h. Front-wheel steering is assisted by a power booster, and the drive to the front wheels can be disconnected instantly if so desired.

The tractor is regularly supplied with a Holland hitch at either end at 16 inches height; however, other types of couplers are optional.

NEWS OF SUPPLIERS

W. E. Brewer

T. V. Rankin

• NOPCO CHEMICAL CO., has appointed Travis V. Rankin as general sales manager in charge of sales of all Nopco products at Nopco's Pacific Division. Mr. Rankin replaces Harold A. Swanson, who has become assistant vice-president in charge of the Vitamin Division of Nopco.

Formerly district manager for the Central Sales District handling Nopco industrial chemicals, Mr. Rankin has been with the company since 1936. He began work for Nopco as a chemist. A year later he became Nopco's Industrial Sales Representative in the Southwest territory. In his new assignment, he will make his headquarters at the Pacific Division's main office in Richmond, Calif.

Taking Mr. Rankin's place as Central District sales manager will be Walter E. Brewer, who will also continue in his present capacity as manager of Nopco's Eastern Industrial Sales District.

Mr. Brewer joined Nopco in 1936, also as a chemist. Two years later he became a member of Nopco's sales force, and in 1948 he was appointed manager of the Eastern Industrial Sales District. Mr. Brewer will continue to make his headquarters at Nopco's main office in Harrison, N. J., but his new duties will make it necessary for him to spend much of his time in the field.

• REICHOLD CHEMICALS, INC., will occupy the entire large, modern two-and-a-half story building at 525 N. Broadway, White Plains, N. Y., as its executive offices. For more than six months the firm has used the second floor of the handsome air conditioned structure which was completed in the spring of 1952.

Since all administrative, sales, foreign and export departments of the entire global Reichhold organization will now be under one roof, visits from plant managers from all parts of the world will become more frequent. Mr. Reichhold said. Therefore, to hasten the arrival of these executives in White Plains from the two principal New York airports at which most of them alight, a helicopter shuttle service will be retained, reducing the trip from Queens to the Westchester County offices to a matter of minutes.

• GRAVER WATER CONDITIONING CO. has opened a new Texas District Office at 5343 McCormick street, Houston, Texas., which will be managed by James J. Hanratty and will serve all of New Mexico and Texas except the northern part of the Panhandle.

Mr. Hanratty has been with Graver for many years and is very well versed in all phases of Industrial and Municipal water treatment and Industrial waste treatment.

• M AND M WOOD WORKING CO., National Tank & Pipe Div., Portland, Ore., will enter the plastic pipe business on a production basis on or about March 15. The board of directors have approved unanimously plans for financing a substantial addition to the wood tank and pipe concern's present plant in Portland's Kenton district and that construction will begin immediately.

A. D. Little To Make Industrial Survey of Iraq

Final approval has been given by the Iraq Development Board to a contract between the Foreign Operations Administration of the United States Government and Arthur D. Little, Inc., research, engineering, and consulting firm of Cambridge, Mass. This contract has been made at the request of the Government of Iraq and calls for the making of industrial survey of that country. A plan of action will be determined for the expansion of existing industries and the development of new ones.

Geoffrey D. Roberts will be administrator of the project and left Cambridge on December 29 for Iraq.

Dr. Lawrence W. Bass, vice-president of Arthur D. Little, Inc., is presently in Baghdad inaugurating the project.

C. H. Nelson

National Paper & Type Reorganized

The Paper Department of National Paper & Type Co., New York was recently reorganized to take care of the increased demand resulting from the opening of new branch offices in Latin America, which now total 44 wholly owned sales outlets.

The work was carried out with the help of C. H. Nelson who before joining National Paper & Type Co. in 1953 as manager of their Paper Division was manager of American Paper & Pulp Co., Inc., in New York and for the four preceding years manager of their subsidiary in Mexico City. Mr. Nelson is in charge of all paper activities of National Paper in the U. S. A., Canada, Europe and Latin America.

As manager of their New York Paper Department, National recently appointed J. A. Prezzo who was formerly connected with Peter J. Schweitzer, Inc., and before as manager of General Overseas International Co. in New York.

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PRICES

MARKET WOOD PULP

First Quarter Contract Prices Per Short Air-Dry Ton

	Delivered Basis		Varying Freight Allowancest		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$75.00/$80.00	‡$60.00/$95.00*	§$78.00/$85.00§	§$80.00/ —	$77.50/ 90.00
Kraft, Bleached	142.50/147.50	145.00/150.00	§142.50/147.50§		
Kraft, Blchd. Hdwd.	140.00/ —		§135.00/ —		
Kraft, Semi-bleached	135.00/ —	130.00/135.00	§137.50/140.00§	*135.00/137.50*	
Kraft, Unbl.	95.00/110.00	110.00/135.00	†110.00/115.00†	*110.00/140.00*	
Sulphite, Blchd.	140.00/ —	140.00/ —	†140.00/145.00†	140.00/ — *	*140.00/142.50§
Sulphite, Unblchd.	120.00/ —	125.00/ —	†125.00/ —	*125.00/130.00	
Sulphite, Unbl. Gl'sn.		129.00/ —	†129.00/ —		
Soda, Blchd.	140.00/ —				

‡ F.o.b. Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

NEW YORK RAG MARKET

New Domestic Cotton Cuttings

Delivered Mill Basis

PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$14.50/ 15.00
No. 1 Unblchd. Muslins	16.25/ 17.00
Blchd. & Unblchd. Underwears	nominal
No. 1 Light Silesias	8.25/ 9.00
No. 1 Blue Overalls	8.00/ 8.50
Percales	6.00/ 6.50
No. 1 Light Prints	5.50/ 6.00
Suntan Khakis	5.75/ 6.00
Cottonades	3.50/ 4.00
No. 1 Washables	3.25/ 3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$2.75/$3.00
Cotton Pants & Overalls	2.00/ 2.25
Thirds and Blues, Repacked	1.65/ 1.75
No. 2 Roofing Rags	nominal

COTTON LINTERS

Memphis Market

F.o.b. Oilmills

	Dec. 21 Per 100 lbs.
Grade 1 n.a.	
2	$9.50/ $7.25
3 1st cut—felting	7.00/ 6.00
4	5.50/ 4.25
5	4.00/ 3.00
6 *2nd cut—chemical	3.00/ 3.00
7	3.00/ 3.00

*Based on 73% cellulose.

Bagging

(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$4.50/ 5.50
Foreign Scrap Burlap	3.50/ 4.00
Heavy Wool Tares	4.75/ 5.25
Austr. Wool Pouches	4.25/ 4.75
Domestic Manila Rope	4.50/ 5.00
Domestic No. 1 Sisal Strings	5.00/ 5.25

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point - Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal. See TRENDS.

	New York	Boston	Chicago	Los Angeles
	Dec. 27	Dec. 24	Dec. 10	Dec. 6
No. 1 Mixed Paper	$10.00/ 13.00	— / 12.00	$11.00/ —	$14.00/ —
No. 1 News	12.00/ 15.00	12.00/ 14.00	17.00/ —	13.00/ —
Overissue News	17.00/ 23.00	17.00/ 20.00	20.00/ 22.00	13.00/ —
Mill Wrappers	10.00/ 19.00	12.00/ 14.00	14.00/ —	13.00/ 14.00
Old Corrugated Containers	19.00/ 23.00	19.00/ 20.00	20.00/ —	20.00/ —
Super Resorted Kraft Paper	45.00/ 50.00	50.00/ 60.00	40.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	37.50/ 52.50	37.50/ 52.50	42.50/ 52.50	35.00/ —
New 100% Kraft Corr. Cuts	50.00/ 60.00	55.00/ 65.00	60.00/ —	— / —
New Br. Kraft Env. Cuts	70.00/ 80.00	65.00/ 78.00	65.00/ —	50.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	50.00/ 60.00	55.00/ —	— / —
New Br. Kr. Bag Waste Unprntd	65.00/ 75.00	63.00/ 65.00	70.00/ —	— / —
No. 1 Groundwood Shvs.	25.00/ 35.00	25.00/ 30.00	22.00/ 27.00	27.00/ 35.00
White Newsblanks	65.00/ 70.00	60.00/ 65.00	45.00/ —	55.00/ —
No. 1 Soft Wht. Shvs., coated	65.00/ 80.00	70.00/ 80.00	65.00/ —	— / —
Hd. Wht. Shvs.	100.00/110.00	95.00/110.00	105.00/ —	105.00/ —
Hd. Wht. Env. Cuts	125.00/130.00	110.00/130.00	105.00/ —	105.00/ —
Col. Tab. Cards	50.00/ 62.00	60.00/ 62.00	50.00/ —	28.00/ 35.00
Manila Tab. Cards, bales	80.00/ 85.00	80.00/ 90.00	85.00/ —	65.00/ — §
No. 1 Col. Ledger	40.00/ 45.00	40.00/ 50.00	42.50/ —	27.00/ 27.50
White Ledger	60.00/ 65.00	65.00/ 68.00	55.00/ —	45.00/ —
Mixed Book & Mag.†	18.00/ 20.00	18.00/ 22.50	12.50/ —	— / —
No. 1 Rep'd. Hvy. Books ‡	27.00/ 30.00	25.00/ 35.00	27.50/ —	10.00/ —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood. § Deld.

PRICES OF MATERIALS

Aluminum sulphate:			
cml. bags, c.l. wks.	cwt.	$1.85	/ —
iron-free, c.l. wks.	cwt.	3.55	/ —
Casein, acid prec.:			
dom. sh. pt. cl.	lb.	.27	/ .32
Arg. ex. dock, duty paid		.21	/ .22½
New Zeal., do.		.23	/ .24
Caustic soda:			
c.l. wks. solid, 76%	cwt.	3.85	/ —
flak. & grd. 400-lb. drums, c.l.		4.25	/ —
liquid 50% tanks		2.70	/ —
liquid 70% tanks		2.80	/ —
China clay:			
dom. air-float, c.l. wks.	ton	10.00	
water-washed, lump, filler	ton	11.00	
coating	ton	17.60	/30.50
imported, ex. ship	short tons	16.50	/31.00
Chlorine:			
single-unit tanks, works	cwt.	2.93	/ —
multiple unit, 2-5 cars per yr.		3.80	/ 5.00
Formaldehyde:			
USP, inh. drms. c.l. wks.	lb.	.062	/ —
l.c.l., E. wks.	lb.	.067	/ —
Lime:			
hydrated bags, wks.	tons	14.50	/15.50
Gum rosin:			
K, M, N, drms, c.l. Savan.	cwt.	8.15	/ 8.30
Rosin size:			
70%, gum & pale grds., tank cars, south, sh. pt.	cwt.	6.80	/ 7.00
Salt cake:			
dom. bulk, 100% anh. wks	ton	24.00	/26.00
imp. f.o.b. Saskatchewan	ton	16.00	/ Cana. funds
Soda ash:			
light, 58%, bags, wks	cwt.	1.65	
bulk	cwt.	1.35	
Sodium silicate, 40° Be.:			
tank-cars, wks.	cwt.	1.00	/ —
drums, c.l. wks.	cwt.	1.35	/ —
42° Be. WW.			
tank-cars, wks.	cwt.	1.60	/ —
drums, c.l. wks.	cwt.	1.95	/ —
Sodium peroxide:			
dms. c.l. E. of Miss.	lb.	.186	
l.c.l. do	lb.	.191	/ .201
Soybean, protein:			
chem. isol., wks. c.l. bags	lb.	.23	/ .25
Sulphuric acid:			
60° Be. c.l. wks.	cwt.	1.75	/ 2.00
l.c.l. wks.	cwt.	2.30	/ 2.45
tank-cars, wks.	ton	16.30	/18.60
Sulphur:			
crude, c.l. mines, contract,	long ton	25.50	/27.50
f.o.b. vessels Gulf	do.	27.50	/30.50
Sulphur dioxide:			
liquid, coml. cyl., wks.	lb.	.09	
multi-unit cars	lb.	.0535	
Starches:			
corn, multiwalls, c.l. prod. plant:			
pearl	cwt.	6.39	/ —
white, dextrins	cwt.	7.78	/ —
chlorinated	cwt.	8.14	/ —
potato, Idaho, c.l. wks.	cwt.	6.75	/ —
East, rail all. 50 cents cwt.			
potato, Maine, f.o.b. wks.	cwt.	6.00	/ 6.15
Talc:			
domestic, sacks, c.l. wks.	ton	25.00	/30.00
Titanium dioxide:			
anatase, c.l. deld. E. bags	lb.	.22½/	.23
l.c.l. deld.	lb.	.23½/	.24
rutile, c.l. deld.	lb.	.24½/	.25
l.c. deld.	lb.	.25½/	.26

Suppliers

(Continued from page 37)

F. Fisher

H. K. Waters

T. L. Iwan

A. H. B. Stensland

• WHITING CORP., Harvey, Ill., has established a new district office in the southeast at Charlotte, N. C. at 1610 Liberty Life Bldg. Mr. Fred W. Fisher has been appointed manager of this new office. For the past eight years Mr. Fisher has been in the company's Philadelphia Office as a sales engineer. Assigned to Mr. Fisher's staff is Harvey K. Waters, formerly working out of Birmingham.

T. L. Iwan has been assigned to the Ardmore (Philadelphia Suburb) District Office as a sales engineer. Mr. Iwan started working at Whiting's Harvey, Ill. plant in 1927 where he has held several positions.

A. H. B. Stensland has been assigned to Whiting's District Sales Office in Pittsburgh. He has been in sales training with the Whiting Corp. for the past year.

• BORDEN CO. has appointed J. Spencer Brown III as advertising manager of its Chemical Division effective January 1. Mr. Brown joined the division's advertising department last year after seven years as assistant to the publisher of "Textile Age Magazine." Prior to that he had been assistant to the financial vice-president of the Columbia Gas System.

• CARBIDE AND CARBON CHEMICALS CO., a Division of Union Carbide and Carbon Corp., has appointed Dr. R. L. Bateman, who was manager, Fine Chemicals Division, to a newly created position as director of Product Development. In this new capacity, Dr. Bateman will work with John A. Field who was recently made vice-president in charge of sales development and related activities.

W. A. Woodcock has been appointed manager, Fine Chemicals Division succeeding Dr. Bateman. Dr. R. H. Wellman has been appointed manager, Agricultural Chemicals Division. Mr. Woodcock and Dr. Wellman will assist Dr. Bateman in developing markets for Carbide's newer products.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

		Nov. 20	Nov. 27	Dec. 4	Dec. 11	Dec. 18
	1954	95.7	92.3	96.3	96.2r	97.2
		Nov. 21	Nov. 28	Dec. 5	Dec. 12	Dec. 19
	1953	96.5	90.1	94.1	93.6	94.8

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1953	94.5	94.6	94.4	92.7	93.9	93.8	82.2	94.7	92.7	97.2	94.6	82.8	92.3
1954	93.3	94.0	93.1	92.2	93.7	89.3	79.1	92.1	89.8	95.2‡	94.8‡		

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1947	1948	1949	1950	1951	1952	1953	1954
Year to Date	102.3	92.5	84.0	96.6	99.6	90.7	93.7	92.3
Year Average	101.7	92.1	83.7	95.8	98.0	88.6	92.3	

PAPERBOARD OPERATING RATIOS†

		Nov. 20	Nov. 27	Dec. 4	Dec. 11	Dec. 18
	1954	94	88	87	94	92
		Nov. 21	Nov. 28	Dec. 5	Dec. 12	Dec. 19
	1953	95	86	88	94	93

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1953	91	95	95	95	96	93	81	98	94	97	94	79	93
1954	89	89	90	88	90	89	74	92	88	94	93		

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables *all* the ratios shown are on the basis of a normal 6 and 7 day capacity.

† Per cents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.

It will speed the reply to your inquiry to mention Paper Trade Journal.

CHAS. T. MAIN, INC.
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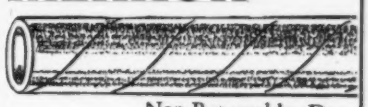
Process Studies, Design, Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.

THE CARTHAGE MACHINE COMPANY
CARTHAGE, NEW YORK
Manufacturer of
Machinery and equipment for Mechanical and Chemical Pulp Mills and Special Machinery

MERKOR



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Returnable and Non-Returnable extra strong mill core for regular and special needs.

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Write for samples and prices
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PAPER TRADE JOURNAL CLEARING HOUSE PAPER TRADE JOURNAL

RATES FOR ADVERTISING (PAYABLE IN ADVANCE) $.75 cents per line (6 words to line) minimum charge $3.75 —Additional charge of 70 cents if box number is used

Situation wanted advertisements can be repeated for ½ rate

Space in this section can also be purchased at $5.00 per column inch—(1" x 2¼")

Address replies to advertisements appearing under Box Number in care of

PAPER TRADE JOURNAL, 15 West 47th Street, New York 36, N. Y.

HELP WANTED

POSITIONS OPEN

We can place—Manager plant mfg. coated, printed and embossed papers; quality control mgr.; sulphite supt. newsprint mill; supt. Fourdrinier paper mill; supt. envelope mfg.; gen. supt. paper board mills; asst. supt. carton plant.

Estimator on folding paper cartons; salesmen for folding cartons, packaging materials, etc.; finishing foremen (several); gluing dept. foreman for folding carton operations; chemist with technical education to sell to mills in Midwest; draftsmen and engineers.

If you are available for a good paying position in paper or pulp manufacturing or paper converting, it will pay you to have your application in our files. Negotiations are confidential. No fee to be paid unless you accept employment through us.

CHARLES P. RAYMOND SERVICE, Inc.
Phone: LIberty 2-6547
294 Washington St., Boston 8, Mass.
D-31

MACHINERY SALESMEN WANTED

To sell on liberal commission basis complete line of gluing, gumming, labeling, lacquering and coating machines. Many territories open. Good opportunity established machinery agents selling to paper converters to supplement earnings substantially. Box 54-450 care Paper Trade Journal. J-3

ORGANIC CHEMIST FOR OUR RESEARCH DEPARTMENT

We are interested in finding an outstanding chemical graduate for our Chemical Research Department. Work will involve product development and pilot plant applications in paper products field. Experience with wet strength resins would be helpful. This is an outstanding opportunity to join fast moving product development phase of our business. Address Box 54-449 care Paper Trade Journal. D-31

Wanted—Master mechanic for one machine mill in Northern Michigan. A top-flight millwright experienced in paper machine maintenance can handle this job. When replying state age, experience, and personal history. Reply Box No. 54-443 c/o Paper Trade Journal. D-31

TOUR BOSS

Experienced in making folding and set-up boxboard. One machine mill. Give age, experience and previous places of employment. Address Box 54-445 care Paper Trade Journal. D-31

WANTED—Boss Machine Tender or A-1 Machine Tender, 2 machine groundwood grade mill. Applicants must be active and wide awake with ability to advance. Salary $500. per month, 40 hour week. Reply, stating experience with references to Box 54-446 care Paper Trade Journal. J-10

HELP WANTED

DESIGN ENGINEERS WANTED FOR SLITTER-REWINDER EXPANSION PROGRAM

Established Machinery Manufacturer Paper Mill Converting and Plastics Field has opportunities for experienced men, to get in on the ground floor of a program for further development and expansion of present line of mill and converting slitters-rewinders.

Good starting salary and unlimited opportunities for qualified men.

Write or Phone

THE BLACK CLAWSON COMPANY
Dilts Machine Works Div.
Fulton, N. Y. Phone: 2-4265
J-10

TECHNICAL SALES SERVICE REPRESENTATIVE

Producer of market wood pulp needs man with technical background plus practical experience in manufacture of pulp and paper to serve as liaison between production organization and customers. Must have administrative ability along with imagination and enthusiasm necessary to help sell Company's product. Salary $10,000 plus. Age 35 to 40 years. Replies stating personal data, education and experience will be kept confidential. Box 54-441 care of Paper Trade Journal. D-31

MECHANICAL ENGINEER WANTED

Graduate Mechanical Engineer experienced in the operation of Fourdrinier paper machines, refining and related equipment for large progressive mill in Middle Atlantic States. Under 35 years of age. Good salary with excellent opportunity for advancement. Give detailed resume of experience. Address Box 54-438 care Paper Trade Journal. J-31

MECHANICAL ENGINEER WANTED

Graduate Mechanical Engineer experienced in pulp and paper maintenance for large progressive mill in Middle Atlantic States. Under 35 years of age. Good salary with excellent opportunity for advancement. Give detailed resume of experience. Address Box 54-439 care Paper Trade Journal. J-31

GRADUATE ENGINEER WANTED

Graduate Mechanical, Chemical or Electrical Engineer under 35 with some pulp and paper mill experience. Southeastern States. Send resume and expected salary. All replies held in confidence. Reply Box 54-369 care Paper Trade Journal. TF

FOR SALE

PRINTING PRESSES

1—52" 3-color Wolverine Hydroprinter. 4-color Frame. Reliance V-S Drive.
1—40" 4-color Hudson-Sharp Flexographic, with Variable Sheeter.
1—36" 2-color Champlain Unit Type Rotogravure.
1—36" 2-Color Manhassett. Roll to Roll with Slitting Attachment.
1—32" 4-color Hudson-Sharp Flexographic Tailprinter.
1—26" 3-Color Windmoeller & Hoeischer Flexographic. Roll to Roll.
1—24" x 36" Meisel 5-Color Adjustable Rotary Oil Ink Press.
1—26" 3-Color Potdevin Flexographic Tailprinter.
1—22" 2 Color Potdevin Roll to Roll Flexographic Press.
1—Two-color, 3" wide Rotary X Tape Printing Press.
1—2 Color, Keese Perfect #2 Seal Press.

POWER PAPER CUTTERS

12—Seybolds, 1—64" Precision, 1—44" Seybold 60, Auto Spacing and side tables, 1—50" 10-2, 1—44" 20th Century, 56" and 64" Daytons, 38", 44", 48", 50" and 64" Holyokes. 1—34" Model 4Y.
6—Oswegos, 38", 50", 57", 68", 74" and 84".
2—Sheridan New Model, 36" & 55".

CAMACHINES

2—84" Type 10.
1—82" Type 10-10.
1—62" Type 10-6D.
1—72" Type 10-14-Mill Type.
1—72" Type 10-11. Shear-cut.
1—62" Type 40-1-AF.
1—42" Type 10-5A, 30" rewind.
1—42" and 72" Type 10-5.
1—42" & 50" Type 6.
1—52" Type 26-3A Duplex.
1—50" Type 40-2M.
1—42" Type 40-5D (Roll Doctor).
1—42" Type 4W (Roll Doctor).

OTHER SLITTERS

3—Goebels Shear Cut Slitters, 1—19", 1—32" and 1—63".
1—132" Appleton Double Drum Winder, 40" rewind.
1—84" Waldron Double Drum Winder.
1—40" Langston Type A Shear-cut and 54" 64" Duplex.
1—48" Inman Shear-cut, 48" dia. Rewind.
1—40" Kidder Model SL Shear-cut.
1—30" Johnstone Special 15 Score Cut.
1—30" and 2—40" Model B Fales.

MISCELLANEOUS MACHINES

1—45" Beck Rotary Sheeter, Model CHSD, Joggertable Delivery, A-C motor.
2—Hayssen Cellophane Wrapping Machines.
1—Langston Tube Winder with Cut-Off Saw and Recutter.
1—80" Combination Creper and Waxer.
1—Hudson Sharp 60" Late Type 25W Wax Roll Winder.
5—Die Presses, 1—46" x 34" Sheridan, 1—38" x 24" Hobbs, 1—40" x 26" Smithe and 2—7' x 42' Seybold.
7—Embossers, 1—26", 1—32", 3—60", 1—72" and 1—81".
1—New Era Carbonizing Machine.
1—Paper Converting Machine Co.'s 3 Web Combined ¼ Fold and Dispenser type Napkin Machine.
2—Potdevin Satchel Bag Machine. 1—Model 1-C & 1-½ bbl.
1—No. 101 and 1—No. 102 Potdevin Bag Machines.
1—Potdevin Model 238 Garment Bag Machine with 2—2-Color Flexographic Tailprinters.
1—60" Chambers Varnishing Machine.
2—Roto Cellophane Bag Machines.
1—45", 48", 56", 72" and 100" Hamblet Single Rotary Sheeters with Backstands and Layboys, 1—72" plain Hamblet Sheeter.
3—Schultz Automatic Rewinders. 1—12", 1—18" — 1—24" for Foil or Paper.
1—International 2P Hot Finish Sheet Waxer.

PAPER AND PULP MILL MACHINERY

1—76" 10-Roll Appleton Double Finishing Stack of Super Calendars. Speed 1800 F.P.M.
1—75" Norwood 10 Roll Calender Stack. Vickery Doctors. Sturtevant Blower System. 75 HP Motor with Adjusto Speed Drive.
1—110" and 2—130" Moore & White Single Rotary Sheeters, with Layboys and Backstands.
3—87" Sandy Hill Single Cylinder Tissue Paper Machines, Complete.

GIBBS-BROWER CO., INC.
Please address reply to Room 902
21 E. 40th Street, New York 16, N. Y.
Telephone Murray Hill 5-7824
D-31

HELP WANTED

EXCELLENT SUPERVISORY POSITION available for technically trained young man in Kraft paper testing laboratory. Location, Eastern Seaboard. Please submit complete resume of education, experience and salary requirements in first letter. Address Box 54-442 care Paper Trade Journal. D-31

SITUATIONS WANTED

WORKS MANAGER — Paper, Board and Conversion, wants change. Seeks challenging opportunity in concern needing man exceptionally capable in organization; labor relations and profitable high level production. Address Box 54-423 care Paper Trade Journal. D-31

GRADUATE FORESTER, B. S. F., 1952, age 26, family, veteran. Now state employed. Experience: cruising, mapping, timber marking, fire control, public relations, management using photogrammetric means, desires position with private company. Address Box 54-444 care Paper Trade Journal. NC

FOR SALE

FOR SALE

40" Clark Sheeter
56" and 62" Hamblet Sheeter with Layboy and Backstand
108" Horne Sheeter
28" Hobb Slitter with 3 rewind shafts
48" Type CH Kidder Slitter with 2 rewind shafts
34" Chandler & Price Power Cutter
84" Type 10 Model A Cameron Slitter
36" Waldron 2 drum Rewinder

THOMAS W. HALL COMPANY
Stamford, Conn.
TF

FOR SALE

We Invite
SPECIALTY COATING JOBS
for the trade
SOLVENT OR EMULSION TYPE
COATINGS—CLEAR OR PIGMENTED
Roll widths up to 60"
Plant located in Chicago.

PAPER CONVERTING & FINISHING CO.
118 N. Ada St., Chicago 7 Ill.
TF

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New Improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester 11, N. Y. TF

WANTED

WANTED—Machines for Bag, Packaging, Paper Boxes and all types Paper, Film and Foil Converting. Describe fully with prices. Box 9B, 3180 N. Lake Shore Drive, Chicago, 14, Ill. TF

LOOK
through the columns of the CLEARING HOUSE
You are bound to see what you need.

WANT TO BUY EQUIPMENT? We'll get it for you.
WANT TO SELL EQUIPMENT? We'll sell it for you.
LOOKING FOR A BETTER JOB? We'll get it for you.
LOOKING FOR COMPETENT HELP? We'll get that too.
all through the CLEARING HOUSE SECTION of
PAPER TRADE JOURNAL

IMMEDIATE DELIVERY
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Clark-Aiken Goebels
ROLL SLITTERS & REWINDERS
for
Paper, Film, Foil, Fabric
Suitable for
Telegraph or Cable Paper Rolls, Tape and Shop Counter Rolls, Rolls For Automatic Packaging Machines

High-speed shear-type cutting. Rugged construction and roller bearings for low maintenance. Fast, easy loading and unloading.

1 HSS1-62" Takes rolls up to 62" wide and 35" diameter. Maximum rewind diameter, 31". Approx. speed 2500 f.p.m. Will slit to 1½" wide.

1 HSS1-72" Takes rolls up to 72" wide and 35" diameter. Maximum rewind diameter, 31". Approx. speed 2500 f.p.m. Will slit to 1½" wide.

1 Rapid U Takes rolls up to 36" wide and 39½" diameter. Maximum rewind diameter, 23⅝". Approx. speed 1650 f.p.m. Will slit to ⅜" wide.

Complete accessory equipment available for all machines

For details, write, phone or wire

The Clark-Aiken Co.
154 Springfield Rd. Ph. Lee 700
LEE, MASSACHUSETTS TF

FOR SALE

1—133" face nine roll heavy calender with 26" bottom roll, one 14, six 11" and top 20". Roll recently ground within a year, with lift screws and coupling.

1—162" Number 18 Camachine, now running with machine 900 FPM, also 162" surface reel and unwind stand.

1—110" and 2—130" Moore & White single cutters with layboys and eight roll backstand. Layboys rebuilt within the last year. Now running.

1—Lobdell Roll grinder. Takes rolls 32" x 200" face. Roll grinder in good condition. About 25 years old.

1—Farrel Roll grinder. Takes rolls 30" x 176". Represented to be in good condition.

1—Harlond electric drive with Farrel reducers, also MG set for 375 HP, for 200-600 FPM.

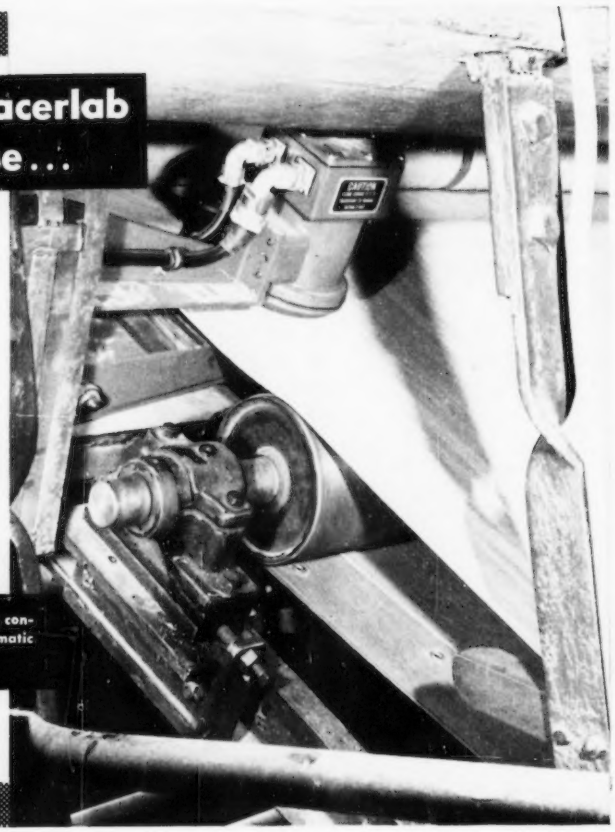
FRANK H. DAVIS COMPANY, 175 Richdale Ave., Cambridge 40, Mass. J-3

CONGOLEUM Likes Tracerlab BETA GAUGES Because...

. . . they are doing for Congoleum-Nairn exactly what they are doing for many other producers (your competitors, perhaps) of sheet materials. Congoleum production people say that their 13 Tracerlab Absorption Gauges have, "cut in half former operating tolerances on calender sheet thickness . . . improved thickness control has resulted in greater product uniformity with a measurable saving in raw material consumption and a reduction of off-quality material . . . the almost instantaneous thickness measurement . . . has speeded up the calender operator's ability to 'get on specification' more quickly."

YOU can obtain these benefits, too, and in many installations Tracerlab gauges pay for themselves in an extremely short time. Request a free plant demonstration . . . evaluate for yourself what beta gauges can do.

Tracerlab has a gauge for every control application, manual or automatic . . . at the lowest price.



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Due to its position as the leading publication in the paper industry, Paper Trade Journal carries more classified advertising than any other paper. This is positive proof that those who read the book recognize the value of these pages as the only medium for disposing of surplus equipment, seeking new or used machines, and to those who are seeking competent personnel as well as those men who are looking for new and better positions.

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Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance.
If box number is used—70 cents additional

Address replies to advertisements appearing under Box Number in care of PAPER TRADE JOURNAL, 15 west 47th Street, New York 19, N. Y.

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Products listed in this section are those submitted by our advertisers.

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Borden Company
Diamond Alkali Co.
The Dow Chemical Co.
E. I. du Pont de Nemors & Co., Inc.
Glidden Company
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company.
Monsanto Chemical Co.
National Starch Products, Inc.
Nopco Chemical Co.
Pennsylvania Ind. Chem. Co.
Rohm & Haas Company

ADJUSTABLE SHAKE
The Bagley-Sewall Corp.
Beloit Iron Works
Black Clawson Company
Downingtown Mfg. Co.
Manchester Machine Co.
Sandy Hill Iron & Brass Works

ADJUSTABLE SPEED DRIVE
Allis Chalmers Mfg. Co.
Reliance Elec. & Engrg. Co.

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Downingtown Mfg. Co.
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Moore & White Co.
D. J. Murray Mfg. Co.
Ronningen-Peter Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

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Palmer Filter Equipt. Co.

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Arnold, Hoffman & Co., Inc.
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Nopco Chemical Co.

APRON CLOTH
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ARBORS, CORE
Bird Machine Company

BAG MACHINES
Dilts Machine Works
Hudson Sharp Machine Co.
Potdevin Machine Co.
R. G. Weber & Co., Inc.

BALL MILLS
Allis Chalmers Mfg. Co.
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BARK BURNER
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Valley Iron Works Co.

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The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BASIC WEIGHT SCALES
Testing Machines, Inc.

BEARINGS
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Beloit Iron Works
Black Clawson Company
Dodge Mfg. Corp.
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B. F. Goodrich Co.
E. D. Jones & Sons Co.
Link Belt Co.
Magnus Metal Corp.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Timken Roller Bearing Co.
The Torrington Co.
Valley Iron Works Co.
Westinghoues Electric Corp.

BEATERS AND JORDANS
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The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Hermann Mfg. Co.
E. D. Jones & Sons Co.
Ross-Midwest Fulton Corp.
Morden Machines Co.
Ronningen-Petter Co.
J. J. Ross Company
Ross Paper Machy. Co.
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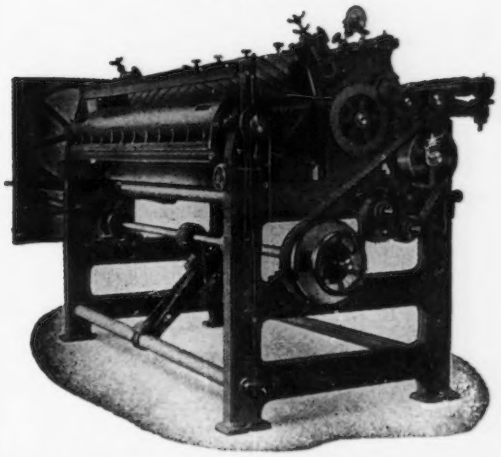

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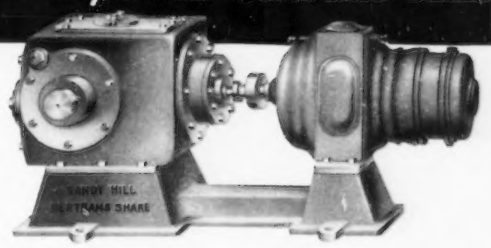

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John W. Bolton & Sons, Inc.

HOODS
Kalamazoo Sheet Metal Mfg. Co.
Ross Engineering Corp., J. O.

HOSE Air, Water, Suction, etc.)
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Arnold, Hoffman & Co., Inc.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

HYDRAULIC OSCILLATING SHOWERS
Ronningen-Petter Co.

HYDRAULIC TURBINES & ACCESSORIES
Allis Chalmers Mfg. Co.
James Leffel Co.

IMPREGNANTS
American Cyanamid Company, Industrial Chemicals Division
Sun Oil Company
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL CONTROL
Allis Chalmers Mfg. Co.
Westinghouse Electric Corp.

INDUSTRIAL TIRES
B. F. Goodrich Co.

INDUSTRIAL TRACTORS
Allis Chalmers Mfg. Co.
Towmotor Corp.

INSTRUMENTS, TESTING AND MEASURING
Black-Clawson Co.
General Electric Co.
W. & L. E. Gurley
B. F. Perkins & Son
The Permutit Co.
Taylor Instrument Cos.
Tracerlab, Inc.
Westinghouse Electric Corp.
Williams Apparatus Co.

INSULATION
Insul-Mastic Corp. of America
Emerson Mfg. Co.

JACKETS
Emerson Mfg. Co.

JOINTS
The Bagley-Sewall Corp.
Beloit Iron Works
Downingtown Mfg. Co.
Johnson Corp.
Moore & White Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

JORDAN BARS
Ronningen-Petter Co.
Shartle Bros. Machine Division

JORDANS
Emerson Mfg. Co.
Ronningen-Petter Co.
Ross Paper Machinery Co.
Shartle Brothers Machine Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Bros. Manufacturing Co.
John W. Bolton & Sons, Inc.
E. D. Jones & Sons Co.
Ronningen-Petter Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KILNS
Allis Chalmers Mfg. Co.
F. L. Smidth & Co.

KNIVES
Black Clawson Company
John W. Bolton & Sons, Inc.
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Moore & White Co.
Shartle Brothers Machine Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOTTERS
Bird Machine Compay
Black Clawson Company
Sandy Hill Iron & Brass Works

LABORATORY CORRUGATOR
Testing Machines, Inc.

LABORATORY DRIERS
Williams Apparatus Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Bauer Brothers Co.
Bird Machine Company
Cady & Co., E. J.
Dilts Machine Works
Downingtown Mfg. Co.
W. & L. E. Gurley
Egan, Frank W., & Co.
E. D. Jones & Sons Co.
Ronningen-Petter Co.
Shartle Brothers Machine Co.
Taylor Instrument Companies
Valley Iron Works Co.
Waldron, John, Corp.
Williams Apparatus Co.

LAMINATING MACHINES
The Bagley-Sewall Corp.
Dilts Machine Works
Egan, Frank W., & Co.
Hudson Sharp Machine Co.
Paper Converting Machine Co.
Potdevin Machine Co.
Ross Paper Machinery Co.
Waldron, John, Corp.

LAY BOYS
Dilts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Ross Paper Machinery Co.

LIME (Hydrated & Quick)
National Gypsum Co.

LINTER PULP
Hercules Powder Co., Inc.

LUBRICANTS
Cities Service Oil Co.
Gulf Oil Corp.
Houghton & Co.
Socony-Vacuum Oil Co.
The Texas Company

MACHINING
Farrel-Birmingham Co.
The R. C. Mahon Company

MAGAZINE REELS
Dilts Machine Works

MAGNETIC SEPARATORS
Bauer Bros. Co.
Emerson Mfg. Co.
Shartle Brothers Machine Co.

MATERIALS HANDLING
Dilts Machine Works
Downingtown Mfg. Co.
Jeffery Mfg. Co.
Link Belt Co.
Shartle Bros. Mch. Co.
Towmotor Corp.
The Wellman Engrg. Co.

MICROMETERS & CALIPERS
Cady & Co., E. J.
Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

MIXERS
Mixing Equipment Co.
Walker Process Equipment, Inc.

MICRO-CRYSTALLINE WAXES
Sun Oil Company

MOISTURE CONTENT CONTROL
Vapo Systems Co.
Williams Apparatus Co.

MOTORS
Allis Chalmers Mfg. Co.

MOTORS AND GENERATORS
Allis Chalmers Mfg. Co.
General Electric Company
Reliance Electric & Engrg. Co.
Westinghouse Electric Corp.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

PACKING BOXES
Johnson Corporation
Moore & White Co.
Shartle Brothers Machine Co.

PAPER CONDITIONERS
Vapo Systems Co.

PAPER MACHINE DRIVES
The Bagley-Sewall Corp.
Beloit Iron Works
Black-Clawson Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Manchester Machine Co.
Moore & White Co.
Sandy Hill Iron & Brass Works
Westinghouse Electric Corp.

PAPER MACHINES
The Bagley-Sewall Corp.
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Manchester Machine Co.
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machinery Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
The Bagley-Sewall Corp.
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER MILL MACHINERY
The Bagley-Sewall Corp.
Farrel-Birmingham Co.
Ronningen-Petter Co.
Ross Paper Machinery Co.
Shartle Bros. Machine Division

PAPER TUBE MACHINERY
Dietz Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.
Paper Converting Machine Co.
Ross Paper Machinery Co.

PARAFFINE WAXES
Sun Oil Company

PARAFFIN WAX EMULSIONS
American Cyanamid Co., Ind. Chem. Div.
Arnold, Hoffman & Co., Inc.
Hercules Powder Co., Inc.
Nopco Chemical Co.

PASTING MACHINES
Beloit Iron Works
Black-Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Compay, Inc.
Moore & White Co.
Murray, D. J., Mfg. Co.
Potdevin Machine Co.
Ross Paper Machinery Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

PEBBLE MILLS
Allis Chalmers Mfg. Co.
F. L. Smidth & Co.

PHOTO GRAVURE ROLLS
Stone, Thos. & Geo. M., Inc.

PIPE
Aluminum Co. of America
Armco Drainage & Metal Products, Inc.
Babcox & Wilcox Co.
Crane Company
Grinnell Company
National Tube Co.
Walworth Company

PIPE FABRICATORS
Pittsburgh Piping & Equipt. Co.
Ronningen-Petter Co.

PIPE FITTINGS
Aluminum Co. of America
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Pittsburgh Piping & Equipt. Co.
Walworth Co.

PIPING, HIGH PRESSURE
Pittsburgh Piping & Equipt. Co.

PIPING (Plioweld Lines)
Goodyear Tire & Rubber Co.

WILLIAMS PRECISION FREENESS TESTER

A Freeness Tester Based on Timed Drainage

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PITCH CONTROL
American Cyanamid Company, Industrial Chemicals Division
Antara Chemicals Division, General Dyestuffs Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Company

PLASTICIZERS
American Cyanamid Company, Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
Arnold, Hoffman & Co., Inc.
B. F. Goodrich Chemical Co.
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Rohm & Haas Company

PLATERS
Gibbs-Brower Company, Inc.
Perkins & Son, Inc., B. F.

PLATES
Armco Steel Corp.
Babcock & Wilcox Co.
Emerson Mfg. Co.
Lukenweld Division
Lukens Steel Company
J. O. Ross Engrg. Corp.
Timken Roller Bearing Co.

PLUGS
The Appleton Machine Co.
Black Clawson Company
Emerson Mfg. Co.
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

POPE TYPE REELS
The Bagley-Sewall Corp.
Black-Clawson Company
Downingtown Mfg. Co.
Egan, Frank W., & Co.
Manchester Machine Co.
Ross Paper Machinery Co.
Sandy Hill Iron & Brass Works

PRESERVATIVES
Antara Chemicals Division, General Dyestuffs Corp.
E. I. du Pont de Nemours & Co.

PRESS ROLLS
The Bagley-Sewall Corp.
Beloit Iron Works
Black-Clawson Co.
Cincinnati Rubber Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Goodrich, B. F., Company, Inc.
Manchester Machine Co.
Moore & White Co.
Ross Paper Machinery Co.
Sandy Hill Iron & Brass Works
Stowe-Woodward Inc.

PRESSURE FILTERS
Bird Machine Company
Holyoke Machine Co.
Hungerford & Terry, Inc.
The Permutit Co.
Ronningen-Petter Co.
Sandy Hill Iron & Brass Works

PRESSURE VESSELS
Chicago Bridge & Iron Co.
Mahon, R. C., Co.
A. O. Smith Corp.

PRESSES
The Bagley-Sewall Corp.
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Hudson-Sharp Machine Co.
Manchester Machine Co.
Moore & White Co.
Paper Converting Machine Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Testing Machines, Inc.
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PRINTING ROLLS
Stone, Thos. & Geo. M., Inc.

PROTECTIVE COATINGS
Insul-Mastic Corp. of America

PULLEYS
Bird Machine Company
Black-Clawson Co.
Dodge Mfg. Corp.
Sandy Hill Iron & Brass Works

PULP CLASSIFIER
The Baner Bros. Co.
Testing Machines, Inc.

PULP CLEANERS
Bauer Bros. Co.
Bird Machine Co.
Nichols Engrg. & Research Corp.
Sandy Hill Iron & Brass Works
Shartle Bros. Machine Co.

PULP REFINERS
Emerson Mfg. Co.
Shartle Bros. Machine Co.

PULP SCREENS
Bird Machine Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Bros. Machine Co.

PULP STOCK VALVES
Crane Company
Grinnell Company
Murray, D. J., Mfg. Co.
Record Fdy. & Mach. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

PULPERS
Apmew, Inc
Bauer Brothers Co.
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Ross-Midwest Fulton Corp.
Morden Machines Co.
Shartle Brothers Machine Co.

PULPS
Brown Company
Gottesman & Co., Inc.
Lyddon & Co. (America), Inc.
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.
Restigouche Co., Ltd.

PULPSTONES
Norton Company

PULP TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

PULP WASHERS
Sandy Hill Iron & Brass Works
Shartle Bros. Machine Co.

PULVERIZING MILLS
Jeffer, Mfg. Co.
P. L. Smidth & Co.

PUMP VALVE BALLS
Shartle Bros. Machine Division
Stowe-Woodward Inc.

PUMPS
Allis Chalmers Mfg. Co.
Apmew, Inc.
The Bagley-Sewall Corp.
Beloit Iron Works
Black Clawson Company
Buffalo Pumps, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hankison Corporation
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Read Standard Corp.
Ronningen-Petter Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

RADIANT BURNERS
Red-Ray Mfg. Co., Inc.

RAG COOKING PROCESSES
General Dyestuff Corp.
Rohm & Haas Company

RAG CUTTERS
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
Taylor-Stiles & Co.

RECOVERY SYSTEMS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.
Vulcan Copper & Supply Co.

REEL DRIVES
Horton Mfg. Co.

REELS
The Appleton Machine Co.
The Bagley-Sewall Corp.
Beloit Iron Works
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Downingtown Mfg. Co.
Hudson-Sharp Mch. Co.
Manchester Machine Co.
Moore & White Co.
Ross Paper Machinery Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.
Waldron, John, Corp.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.

BUY
U. S. SAVINGS
BONDS

J. E. SIRRINE CO.
Greenville, South Carolina
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Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Ross Paper Machinery Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
Valley Iron Works

REFRACTORIES
Harbison-Walker Refractories Co

REGULATORS
Airmatic Valve, Inc.
Apmew, Inc.
Bird Machine Company
General Electric Co.
Johnson Corp.
Poirier Control Company
Shartle Brothers Machine Co.
Taylor Instrument Companies
Westinghouse Electric Corp.

RESINS
American Cyanamid Company, Plastics & Resins Division
Borden Company
The Dow Chemical Company
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
Koppers Company, Inc.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Pennsylvania Indust. Chem. Corp.
The Permutit Co.
Rohm & Haas Company

ROLLS
Appleton Machine Co.
The Bagley-Sewall Corp.
Beloit Iron Works
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Emerson Mfg. Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
B. F. Goodrich Co.
Holyoke Machine Co.
Lindsay Wire Weaving Co.
Lobdell United Co.
Manchester Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Stone, Thos. & Geo. M., Inc.
Stowe Woodward Inc.
Tyer Rubber Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company
Stowe-Woodward Inc.
Tyer Rubber Co.
U. S. Rubber Co.

ROLL HANDLING EQUIPMENT
Dilts Machine Works

ROLL STANDS
The Bagley-Sewall Corp.
The Black-Clawson Company
Cameron Machine Co.
Dilts Machine Works
Frank W. Egan & Co.
Moore & White Co.
Ross Paper Machinery Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
H. G. Weber & Co., Inc.

ROPE CARRIERS
The Bagley-Sewall Corp.
Black Clawson Co.
Downingtown Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works

ROTARY KILNS
Allis Chalmers Mfg. Co.
F. L. Smidth & Co.

ROTARY SCREENS
Bird Machine Company
E. D. Jones & Sons Co.
Ross Paper Machinery Co.

ROTARY STEAM JOINTS
Johnson Corp.
Moore & White Co.
Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

RUBBER COVERED ROLLS
Stowe-Woodward Inc.
Tyer Rubber Co.

RUBBER PRODUCTS
B. F. Goodrich Co.
The Goodyear Tire & Rubber Company
Stowe-Woodward Inc.
Tyer Rubber Co.

SAMPLE CUTTERS
Testing Machines, Inc.

SATURANTS
B. F. Goodrich Chemical Co.

SATURATING MACHINES
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

SAVEALLS
Bird Machine Company
Chicago Bridge & Iron Co.
Moore & White Co.
Ronningen-Petter Co.
Ross Paper Machinery Co.
Shartle Bros. Machine Co.
Walker Process Equipment, Inc.

SAWS
Moore & White Co.
Simonds Saw & Steel Co.

SCALES
Cady & Co., E. J.
Merrick Scale Mfg. Co.
Testing Machines, Inc.

SCREEN PLATES
Bird Machine Company
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Testing Machines, Inc.

SCREENS
Appleton Machine Company
Appleton Wire Works
The Bagley-Sewall Corp.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Sompany, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
Murray, D. J., Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Valley Iron Works Co.

SCREENS, CHIP (Vibrating)
Allis Chalmers Mfg. Co.
Link Belt Co.

SCREENS (Rotary)
Bird Machine Company

SHAFT MOUNTED DRIVES
Falk Corporation

SHAKES
The Bagley-Sewall Corp.
Black Clawson Company
Downingtown Mfg. Co.

SHAKE STICKS
Westinghouse Electric Corp

SHEET MACHINES
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Ronningen-Petter Co.
Ross Paper Machinery Co.
Testing Machines, Inc.
Valley Iron Works Co.
Williams Apparatus Co.

SHOWER PIPES
The Bagley-Sewall Corp.
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Emerson Mfg. Co.
Moore & White Co.
Ronningen-Petter Co.
Sandy Hill Iron & Brass Works
Sandusky Fdy. & Mch. Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Sompany, Inc.
Jeffrey Mfg. Co.
Taylor, Stiles & Co.

SIZE PRESSES
The Bagley-Sewall Corp.
Black-Clawson Co.
Downingtown Mfg. Co.
Manchester Machine Co.
Moore & White Co.
Sandy Hill Iron & Brass Works

SIZING
American Bitumiuls & Asphalt Co.
American Cyanamid Company, Industrial Chemicals Division
The Dow Chemical Company
du Pont, E. I., de Nemours & Co.
Glidden Company
Hercules Powder Co.
The Hubinger Co.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SIZING TESTER
W. & L. E. Gurley
Testing Machines, Inc.
Williams Apparatus Co.

SLIME CONTROL
Antara Chemicals Division, General Dyestuffs Corp.
The Dow Chemical Company
E. I. du Pont de Nemours & Co.
Monsanto Chemical Co.
National Aluminate Corp.
Rohm & Haas Company
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

SLITTERS
The Bagley-Sewall Corp.
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson-Sharp Mch. Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Paper Converting Machine Co.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SMOKE STACKS
Chicago Bridge & Iron Co.

SOFTNESS-STIFFNESS TESTER
W. & L. E. Gurley

SOLUBLE OILS
American Cyanamid Company, Industrial Chemicals Division
Antara Chemicals Division, General Dyestuffs Corp.
Arnold, Hoffman & Co., Inc.
Nopco Chemical Co.

SOLVENTS
Pennsylvania Ind. Chem. Co.

SPECIAL MACHINERY
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Egan, Frank W., & Co.
Farrel-Birmingham Co.
Mahon, R. C., Co.
Manchester Machine Co.
Moore & White Co.
Murray, D. J., Mfg. Co.
Paper Converting Machine Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Machine Co.
Waldron, John, Corp.

SPEED REDUCERS
Dodge Manufacturing Corp.
Downingtown Mfg. Co.
Falk Corporation
Farrel-Birmingham Co.
Link Belt Co.
Westinghouse Elec. Corp.

SPLICING TISSUE
Williams-Gray Co.

STAINLESS STEEL
Armco Steel Corp.
Crucible Steel Co.
U. S. Steel Corp.

STARCH
Clinton Foods, Inc.
Corn Products Sales Co.
The Hubinger Co.
National Starch Products, Inc.

STEAM JOINTS
Beloit Iron Works
Moore & White Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

STEAM SPECIALTIES
Babcock & Wilcox Co.
Johnson Corp.

STEEL
Armco Steel Corp.
Carnegie Illinois Steel Co.
Crucible Steel Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
U. S. Steel Corp.

STEEL, CLAD
Babcock & Wilcox Co.
Lukens Steel Company

STEEL TANKS
Chicago Bridge & Iron Co.
Ronningen-Petter Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Machine Co.

STOKERS
Westinghouse Elec. Corp.

STRAINER SCREENS
Ronningen-Petter Co.

STRAINERS
Ronningen-Petter Co.

STRETCH TESTER
Testing Machines, Inc.

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

STUFF BOXES
Kalamazoo Sheet Metal Mfg. Co.

SUCTION BOX COVERS
Appleton Wood Products
Emerson Mfg. Co.
Moore & White Co.
Westinghouse Electric Corp.

SUCTION BOXES
The Bagley-Sewall Corp.
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Manchester Machine Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

SUCTION ROLLS
The Bagley-Sewall Corp.
Beloit Iron Works
Downingtown Mfg. Co.
Manchester Machine Co.
Ross Paper Machinery Co.

SULPHUR
Texas Gulf Sulphur Co.

SULPHUR BURNERS
Valley Iron Works Co.

SUPERCALENDERS
The Appleton Machine Co.
B. F. Perkins & Son, Inc.
Ross Paper Machinery Co.

SWITCHGEAR
Allis Chalmers Mfg. Co.
Westinghouse Elec. Corp.

SYNTHETIC LATICES
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Koppers Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.

SYNTHETIC RESINS
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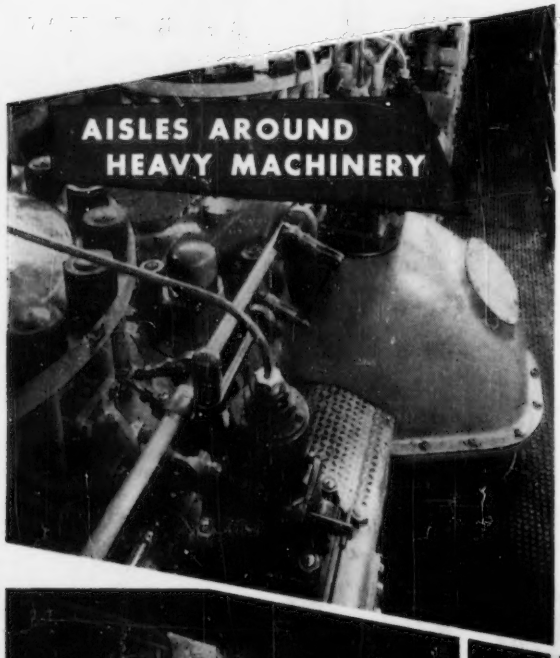

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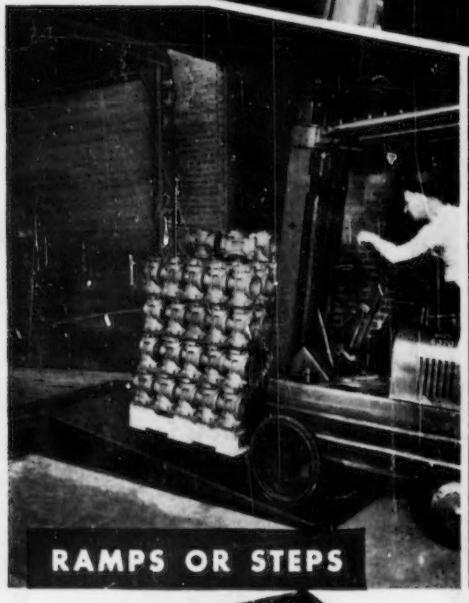

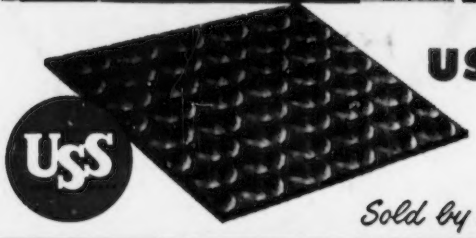

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